THE IRON TRADE REVIEW

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THE WEEK IN IRON CIRCLES.

THE MARKET AT LARGE.

There has been a further readjustment of values in the iron and steel trade in the past week. Bessemer billets have been reduced $4 per ton and open-hearth $5, the differential of one dollar in favor of open-hearth being discontinued. Quotations on several finished lines have already been adjusted to conform to the new basis, and values in other finished lines are being adjusted as rapidly as possible. Steel bars have been reduced $6, and are now quoted on a basis of 1.30c, Pittsburg, while hoops have been reduced $5 and bands take the bar base. The reduction on steel bars completely wipes out the disparity in price which has existed for some time in favor of iron bars, both now being quoted on the same basis. By this reduction the spread between billets and the finished product has been reduced from $5 to $3 a ton, and the small finishing mills, not controlling their supply of steel, will not be in a position to compete with the larger producers. Bessemer and open-hearth rods are now quoted at $31, Pittsburg, and this could be shaded on a large tonnage. A meeting of manufacturers of plates was held in New York Tuesday. Prevailing quotations were reaffirmed. Prevailing prices of plates were fixed in April, 1901, and have since remained unchanged, despite fluctuations in billet prices. No reduction has been made on structural shapes, as it is held that present prices and the reduced prices on billets afford the proper spread to cover the cost of rolling. Quotations on black sheets are off $5 from the official list, while concessions of $2 per ton are being made on wire and wire nails to large buyers. The reported reduction on tinplate is unconfirmed, although concessions of 5 to 10 cents a box are being made. Another meeting of the billet association is being held in New York today and a meeting of the rail manufacturers will follow. At the billet meeting some features regarding the operation of the association not adjusted last week will be settled. In the East, the largest Canadian interest, which has been selling billets at tidewater at $26.72, duty paid, will no longer be a disturbing factor, as $24.25 at Philadelphia and Baltimore, $24.75 at New York, and $25.25 at Boston and New England points, can hardly be met. A large Southern interest which has been selling some steel in the Central West will also be unable to compete on the new basis. Northern iron is in little demand on account of the low prices quoted by Southern producers, gray forge having touched $8, Birmingham, while on No. 2 foundry, Southern producers are not going below $9.50, and several furnaces refuse to accept business under $9.75. A large pipe interest in the Central West is reported to be negotiating for 12,000 tons of Southern iron, while Pittsburg reports more activity in pig iron than for some time. Pig iron production in the Central West was curtailed 35 percent during October, as compared with September production, while the output at these furnaces is now being reduced 51 percent. This will be still further increased before the end of the month. Coke producers of Western Pennsylvania met in Pittsburg this week for the purpose of organizing an association to establish prices and curtail output. No action was taken, a committee having been appointed to report at an early date. Two steel plants, one at Youngstown, O., and one in the Pittsburg district, resumed operations this week, the latter operating on orders secured for the export trade recently closed by the United States Steel Corporation.

In Chicago, Southern iron is being sold on a basis of $9.50 Birmingham for No. 2, and Northern irons have been reduced $1—to the basis of $14.50 for No. 2 foundry. On bar iron 1.40c is now the prevailing price in Chicago and a reduction has been made on plates by independent manufacturers.

At a meeting of the shafting manufacturers held in Pittsburg Wednesday, a reduction of 5 percent was made. The sheet lodges of the Amalgamated Association are in favor of calling a special convention for the removal of the limit of output in union sheet mills and a convention will be called within a few days.

PITTSBURG.

OFFICE OF *The Iron Trade Review*, 429 PARK BUILDING, NOV. 11.

At the meeting of the steel billet manufacturers' association, held in New York last Wednesday, a reduction of $4 per ton on Bessemer and $5 on open-hearth billets was made. The reduction was not unexpected, as heavy concessions had been made for some time below agreed quotations. Quotations on finished lines are now being readjusted to the new basis, steel bars having been reduced $6 per ton, at a meeting of the steel bar manufacturers held in New York last Friday, while hoops have been reduced $5 per ton and bands take the bar base. Cotton ties, however, remain unchanged.

At meetings of the plate and structural associations held Tuesday, prevailing quotations on the latter were reaffirmed. Structural shapes and steel bars have been quoted on the same basis for the past year and a half, although previous to that time structural shapes always commanded a higher price. The reason given for not reducing structural shapes at this time is that present quotations and the reduced prices of billets give the proper spread to cover rolling costs and furthermore that the differential of $6 per ton over bars is claimed to be none too high.

The reduction in the price of steel bars is the first that has been made since April, 1902, when agreement quotations were advanced from 1.50c to 1.60c, while structural shapes and plates have remained unchanged since April, 1901, when prices were advanced to the 1.60c basis. Other lines will also be readjusted, a further reduction in wire products and wire nails being expected daily, while it is reported that sheets have been reduced $5 per ton, although no official confirmation of this can be had. Nevertheless, a reduction of $5 from the last official price would merely reduce this quotation to the actual selling price for large lots of No. 28 gauge black sheets. A reduction in tin plate is also looked for amounting to 20 cents a box, while the quotations on shafting will no doubt be reduced.

Another meeting of the billet manufacturers is being held in New York today for the purpose of finally arranging a few details regarding the schedule decided upon last week. At that meeting it was decided to continue the pool for only one week and at the meeting today the pool will no doubt be continued indefinitely. At last week's meeting two of the largest open-hearth producers in the country refused to become parties to the agreement, but it is believed that they will join with the other manufacturers

in conclusions. A meeting of the steel rail manufacturers is also being held, but it is not definitely known what course will be pursued, although sentiment is strongly against any reduction in prices, while the railroads are asking for a reduction of $2 per ton. At the meeting of the rail pool last Thursday in New York, nothing was done with regard to changing prevailing quotations. Following the reduction in the price of billets, Bessemer and open-hearth rods are quoted at $31 Pittsburg. Bessemer and open-hearth billets are now quoted on the basis of $23 Pittsburg, the extra of $1 for open-hearth being cut off entirely. The reduction on steel bars reduces the spread between the former price of billets and bars from $5 to $3 per ton, which prevents the finishing mills that are compelled to buy their billets in the open market from competing with the larger mills as the cost of rolling billets into bars is considerably over $3 per ton.

Three of the five members of the pig iron committee appointed by the blast furnace operators of the Central West met in this city last Friday for the purpose of officially increasing the curtailment from 25 to 40 or 50 percent. Chairman Butler, however, informed the other member of the committee that according to the last returns which he had received the production in the Central West is being curtailed 49 percent, and this has been increased to 51 percent this week. From the number of furnaces that are now preparing to bank and blow out, it is almost a certainty that the pig iron production will be curtailed fully 60 percent in this district within two weeks. The curtailment during the month of October amounted to 35 percent of the production during the month of September.

A meeting of the coke producers of Western Pennsylvania was held in the office of W. P. Snyder & Co. on Monday for the purpose of curtailing production and establishing a minimum price both for furnace and foundry coke. Nothing definite was decided at the meeting, a committee having been appointed to formulate a plan and report at a meeting to be held within a few days. It is probable that some selling arrangement will be decided upon through which the present cutting of prices can be effectively stopped. The H. C. Frick Coke Co., together with the largest independent operators in the upper and lower Connellsville region, attended the meeting, and whatever plan will be adopted can no doubt be carried out successfully. One sale of outside furnace coke was made this week for delivery to Cleveland, O., at $1.50 at the ovens, while strictly Connellsville foundry coke is quoted at $2.50 by some operators, while the H. C. Frick Coke Co. is quoting $2.65.

Local demand for pig iron has improved somewhat and the volume of business that is being done is increasing. In finished lines, however, the market remains exceedingly quiet, consumers waiting to learn the extent of present reductions.

The Bessemer plant of the Republic Iron & Steel Co. at Youngstown, O., which was shut down last week, resumed operations on Monday, while the Duquesne plant of the Carnegie Steel Co. after an extended idleness resumed in nearly all its departments. In the latter plant, tin bars for the export orders recently secured in Wales, will be rolled.

Pig Iron.—Pig iron production in the Central West is now being curtailed at the rate of 51 percent and within ten days it is predicted that the production will be curtailed fully 60 percent. Several furnaces will go out this week and a number will go out of blast next week and the week following. None of the thirty-one furnaces idle a week ago have resumed operations this week, although the three stacks of the Carnegie Steel Co. at Youngstown, O., will resume operations about Nov. 23. At the meeting of the committee appointed by the blast furnace operators held here last Friday it was decided to take no official action regarding an increase in production curtailment, inasmuch as at that time the production was curtailed at the rate of 49 percent. The banking of furnaces since that date has increased the curtailment percentage to 51 percent. The demand for foundry iron in this district has improved somewhat during the week, inquiries being more numerous and several orders have been placed for delivery until the end of the year. The sales of several 500-ton lots, and one 1,000-ton lot have been reported. Northern operators are holding firmly at $14.50 as a minimum for No. 2, while special brands command as high as $15 to $15.25. The minimum on Southern No. 2 is $13.85 Pittsburg, while a number of furnaces are holding firm for $14.10. Southern forge is offered in this market on the basis of $8.25 Birmingham or $12.60 Pittsburg. Little is being sold, however. While the furnaces affiliated with the Bessemer association are holding their iron at $15 at the furnace, outside operators are quoting $14.75. There is practically no demand for basic iron. We make the following quotations:

Bessemer, Valley	$14 75 to 15 00
Bessemer, Pittsburg	15 60 to 15 85
No. 1 Foundry	15 25 to 15 50
No. 2 Foundry	14 25 to 15 00
Gray Forge, Pittsburg	13 50 to 13 75
Chilled Basic, Valley	14 75 to 15 00
Chilled Basic, Pittsburg	15 00 to 15 85

Steel.—At a meeting of the steel billet manufacturers held in New York last Wednesday the price of Bessemer billets was reduced $4 per ton and open-hearth billets $5 per ton. This places open-hearth billets on the same basis as Bessemer. Extras for carbons applying to Bessemer now also apply to open-hearth and the clause in the former agrreement calling for an advance of $3 per ton for forging billets has been stricken out entirely, these now going at the base rate. A meeting of the billet manufacturers is being held again today in New York for the purpose of adjusting some minor details. At the meeting last week it was decided to continue the agreement for one week only, until a committee appointed at that time could present a report concerning some details not adjusted at the former meeting. Despite the recent reduction in open-hearth billets, independent producers are offering their product at $22 Pittsburg, but little business is being done. Following the reduction in billets, both Bessemer and open-hearth rods are being offered at $31 Pittsburg, and no doubt $30.50 could be done on a desirable order. We revise quotations as follows: Bessemer and open-hearth billets, 4 x 4 inches, and slabs, up to and including 0.25 carbon, $23, Pittsburg, Wheeling, Valley, Johnstown, Ashland, Ky., Ironton, O., and Lorain, O.; 0.26 and including 0.60 carbon, $1 advance, and 0.61 to 1.00 carbon $2 advance. Billets smaller than 3⅞ inches and sheet and tin bars are $1 per ton extra. Bessemer and open-hearth rods are quoted at $31 Pittsburg, but there is little buying, and no doubt a large order could be placed at $30.50.

Ferro-Manganese.—Both foreign and domestic manganese are held at $48 per ton delivered in carload lots at buyer's mill, at points east of the Mississippi river. This price could be shaded $1 per ton on a desirable order.

Muck Bar.—All pig muck bar is held firmly at $27.50 Pittsburg, but there is little demand. Eastern muck is being offered in this market at $26.50 to $27.

Skelp.—Grooved and sheared iron skelp are now quoted nominally at 1.35c to 1.40c Pittsburg, while steel skelp is held at 1.30c to 1.40c.

Rails and Track Material.—At a meeting of the rail pool held last Thursday ruling quotations were reaffirmed.

We revise quotations as follows: Standard sections, 50 pounds and over, in lots of 500 tons and over, $28; car lots and less than 500 tons, $30; less than car lots, $32; light rails, 8 pounds, in carload lots, $35; less than carload lots, $36; 12 pounds, $30 to $31; 16 and 20 pounds, $28 to $29; 25 to 40 pounds, $26.50 to $27. Track material: Spikes, 1.95c to 2c; track bolts, square nuts, 2.25c to 2.30c; hexagon nuts, 2.40c to 2.45c; fish plates, 1.60c on orders accompanying large rail contracts, otherwise 1.80c to 1.85c is asked.

Bars.—At a meeting of the steel bar association held in New York last Friday the price of steel bars was reduced $6 per ton. No changes were made in the extras, however. Hoops and bands were reduced $5 per ton. No change

was made in the price of cotton ties. The reduction on Bessemer bars was $2 per ton greater than the reduction on billets, while the reduction compared with that of open-hearth billets is only $1 per ton greater. The differential heretofore existing on billet pool prices of $5 per ton has thus been reduced to $3 per ton, thus making it impossible for the small producer of bars who is compelled to buy his billets to compete with the large steel producers. Little new business is being placed, consumers waiting to see whether recently established prices will hold. Iron bars are now being almost uniformly quoted on the basis of 1.30c Youngstown or 1.34¾c Pittsburg. We revise quotations as follows: Bessemer steel bars, 1.30c; open-hearth, 1.40c; plow beams and cultivator beams, 1.30c, net; channels, angles, zees and tees, Bessemer, under 3 inches, 1.40c; common bar iron, 1.35c to 1.40c Pittsburg. The following differentials are maintained on steel: Less than 2,000 pounds of a size and not less than 1,000 pounds, 10 cents advance; less than 1,000 pounds of a size, 30 cents advance. Hoops and bands are quoted at 1.65c, full extras, in 250-ton lots and over, and 1.75c in less than 250-ton lots.

Structural Material.—At a meeting of the manufacturers of structural shapes held in New York yesterday prevailing quotations were reaffirmed. Since April, 1901, these official prices have remained unchanged, and despite the higher prices that were asked by many dealers for material in hand during the past two years, the mills adhered to the base price on all desirable business. Furthermore, the spread between structural shapes and steel bars is now no greater than should be the case, as the cost of rolling structural shapes is considerably over that of steel bars. Reaffirmed prices are as follows: Beams and channels, 3 to 15 inches, 1.60c; 18 to 24 inches, 1.70c; tees, 1.65c; zees, 1.60c; angles, from 3 to 16 inches, 1.60c; universal mill plates, 1.60c.

Plates.—A meeting of the plate manufacturers was held in New Yofk yesterday, and prevailing prices were reaffirmed. We quote: Tank plates, ¼-inch thick and up to 100 inches in width, 1.60c, at mill, Pittsburg; flange and boiler steel, 1.70c; marine, ordinary firebox, A. B. M. A. specifications, 1.80c; still bottom steel, 1.80c; locomotive firebox, not less than 2.10c, and it ranger in price to 3c. Plates more than 100 inches, 5c extra 100 pounds. Plate 3-16-inch in thickness, $2 extra; gauges Nos. 7 and 8, $3 extra. These quotations are based on carload lots, with 5c extra a hundred pounds for less than carload lots. Terms, net cash, in 30 days.

Sheets.—While it has been rumored that a reduction of $5 per ton has been made on black sheets no official announcement to this effect has yet been made. The last list issued placed 28-gauge black sheets on a basis of 2.75c, while large lots are now selling at 2.50c, so that a reduction from the last official price of $5 per ton would mean little to the trade. Further concessions are being made in galvanized sheets which are being quoted in ordinary lots at 75, 10 and 7½, and 75, 10 and 10 off the list. We quote black sheets in 500-bundle lots and over as follows: No. 28, 2.50c to 2.55c; No. 27, 2.40c to 2.45c; No. 26, 2.30c to 2.35c; Nos. 22 and 24, 2.20c to 2.25c; Nos. 18 and 20, 2.10c to 2.15c; Nos. 14 and 16, 2c to 2.05c; Nos. 10 and 12, 1.90c to 1.95c. Galvanized: No. 16, 2.45c to 2.50c; No. 18-20, 2.65c to 2.70c; No. 22-24, 2.85c to 2.90c; No. 25-26, 3.05c to 3.10c; No. 27, 3.25c to 3.30c; No. 28, 3.45c to 3.50c; No. 29, 3.90c to 4c; No. 30, 4.25c to 4.30c.

Wire and Wire Nails.—Concessions of $2 per ton on all wire products and wire nails are being made to large purchasers, while small buyers are receiving concessions of $1 per ton. A still further reduction is looked for by the trade this week. We revise quotations as follows: Wire nails, carload lots, to jobbers, f. o. b. cars, Pittsburg, $1.90 to $1.95; plain wire, carload lots, $1.80 to $1.85; barb wire, carload lots, $2.20 to $2.25; staples, carload lots, $2.10 to $2.15. Galvanizing, 30 cents extra. Carload lots to retailers are held at 5 cents advance in all lines, and on less than carload lots a further advance of 10 cents is charged. Steel cut nails are quoted as follows: Carload lots, $1.90, and less than carload lots, $1.95, f. o. b. Pittsburg, plus freight to point of destination. Iron cut nails are $2 in carload lots and $2.05 in less than carload lots. Terms, 60 days, less 2 percent off in 10 days.

Merchant Steel.—A meeting of the shafting manufacturers is being held in this city today and a reduction in prevailing quotations has been agreed upon. Demand for shafting has fallen off heavily, due largely to the almost complete stoppage of new plant erection. We make the following quotations: Turned cold rolled and ground shafting, 52 off in carload lots and 47 percent off in less than carload lots. Tire steel, 2.15c to 2.25c; spring steel, 2.25c to 2.35c; toe calk, 2.30c to 2.40c. Tool steel is quoted 7 cents and upwards, according to the grade.

Pipes and Tubes.—The volume of business that is being placed is not very heavy and independent manufacturers continue to cut the prices of the largest producer from 2½ to 5 percent. While other finished lines are being reduced, it is not probable that a reduction will be made by the largest producer for some time, if at all, inasmuch as its quotations during the past year have been based on billets at prices considerably below those prevailing through the year. We quote as follows in carload lots to consumers, f. o. b. Pittsburg, plus freight according to Tube Rate Book to destination:

MERCHANT PIPE.

	Steel Pipe.		Wrought Iron Pipe.	
	Black. Percent.	Galv. Percent.	Black. Percent.	Galv. Percent.
⅛, ¼ and ⅜ inch	68	58	65	55
½ inch	70	60	67	57
¾ to 6 inch	75	65	72	62
7 to 12 inch	69	59	66	56
Plugged and Reamed				
1 to 4 inch	73	63	70	60
Extra Strong Plain End				
⅛ to 8 inch	67	57	63	53
Threads only	66	56	62	52
Threads and Couplings	65	55	61	51
Double Extra Strong Plain End				
½ to 8 inch	59	49	55	45
Threads only	58	48	54	44
Threads and Couplings	57	47	53	43

NOTE.—Orders for less than carload will be charged at 12½ percent advance. Extra and Double Extra Strong Cut Lengths, lower random discounts by 10 percent net for 6 feet and longer, and 15 percent net for 3 to 6 feet.

BOILER TUBES.

Steel.

	Percent.
1 to 1½ inches	45
2¼ to 5 inches	62½
1¾ to 2¼ and 6 to 13 inches	52½

Iron.

	Percent.
1 to 1½ inches	36½
2¼ to 5 inches	45½
1¾ to 2¼ and 6 to 13 inches	35½

CASING.

	S. and S. Percent.
2 to 3 inches	58
3¼ to 4 inches	60
4¼ to 12½ inches	63

Old Material.—Heavy melting stock in 1,000-ton lots is now being offered in the open market by some of the largest steel producers and we note the sale of 2,000 tons of heavy melting stock at $15 Pittsburg, gross. Otherwise the market is quiet and there is a wide range of quotations on all material.

Coke.—A meeting of coke operators, representing 90 percent of the ovens in Western Pennsylvania, was held in the offices of W. P. Snyder & Co. on Monday for the purpose of devising ways and means of further curtailing production and establishing a minimum price both for furnace and foundry coke. No action was taken, however, a committee of seven having been appointed for the purpose of formulating plans to be presented and acted upon at a meeting of the coke operators to be held at an early date. One of the suggestions made calls for the establishment of a central selling agency, through which all the coke is to be sold at the prices to be agreed upon, while some of the operators are in favor of establishing a bureau similar to that of the billet association, which provides for the daily report of sales by all the manufacturers. The H. C. Frick Coke Co. is offering 72-hour Connellsville foundry coke at $2.65 at the ovens, and while not definitely known, it is probable that this company will also accept orders for the furnace trade. The following committee

was appointed at the meeting on Monday: Thomas Lynch, president of the H. C. Frick Coke Co. and the United States Coal & Coke Co.; William Darsie, secretary of the Hecla Coke Co.; E. D. Whyel, of Uniontown, representing the independent coke operators in the Connellsville and Klondike regions; W. J. Rainey, Cleveland; W. Y. Humphries, president Bessemer Coke Co.; John M. Jamison, Jamison Coal & Coke Co., and W. P. Snyder, of W. P. Snyder & Co. Strictly Connellsville furnace coke is held at $1.70 to $1.80, while outside coke is held considerably below this price, one sale of 20,000 tons having been made this week at $1.50 at the ovens. First-class Connellsville foundry coke is held at $2.50 to $2.65. The production of the Connellsville region has now fallen off 100,000 tons per week, the production of the upper and lower regions of the Connellsville field having dropped to 200,241 tons for the week ending Saturday, Oct. 31. Over 7,000 ovens were idle during that week, while those in blast only produced on an average of five days a week.

CHICAGO.

OFFICE OF *The Iron Trade Review*,
1115 MONADNOCK BLOCK, Nov. 10.

The most important news of the week in the iron and steel trade is the reduction of the pool price of billets and steel bars. The former product was cut $4 a ton at a meeting of the manufacturers who are parties to the agreement made in New York last Thursday, while the cut in the price of bars was the outcome of the meeting held in the same city the following day. Neither change was a surprise to the trade, as the independent producers of billets had for some time been shading the agreed price; and on steel bars buyers had generally held off in their purchases in anticipation of the step that has just been taken. Both Bessemer and open-hearth billets are now on the basis of $24 a ton Chicago, the extras formerly asked, consisting of $1 for open-hearth re-rolling and $3 for forging billets, having been abolished. Other finished products have suffered a decline in sympathy with the reduction on steel. Bar iron is now generally held at 1.40c Chicago; black sheets on the basis of $34 a ton for No. 28 gauge, and wire rods at about $34 a ton Chicago, though no sales have been made during the week. Steel tire and toe calk steel have been reduced $6 a ton, and spring steel $5. Plates are weak and independent producers are shading the official prices $4 a ton. It is reported that a meeting of the manufacturers in the plate pool will be held in the near future to take some action regarding the price of this product. Pig iron has been forced to a lower level during the week, and Southern No. 2 Foundry is now being offered at $9.50 Birmingham, with reports of lower prices being quoted. Northern irons have also declined $1 a ton, sales of No. 2 Foundry having been made at $14.50 Chicago. Coke is also lower, standard 72-hour Connellsville being offered by some dealers at $2.60 at the ovens, and others $2.65. Jobbers have reduced their prices on materials from stock in proportion with the cut on mill shipments. Buying during the week has been only moderate except the warehouse trade which is reported active. Scrap is lower, and our quotations on all products have been reduced from 50 cents to $1 a ton.

Pig Iron.—This market may be characterized as a waiting one, with foundrymen doing most of the waiting. Buying is confined to the limits of carload lots, with occasional orders running into several hundred tons. The business placed is sharply contested for by all the Southern furnaces, and prices are suffering as a result of the competition. No. 2 Foundry is now freely offered at $9.50 Birmingham, and reports are made that prices lower than this have been quoted. These cannot be verified at any of the selling offices, however; and it is necessary to state in correctly reporting the situation that the furnaces making the $9.50 quotation are insisting on immediate shipment of the iron sold at this figure. On extended deliveries, the price is from 25 cents to 50 cents higher. A reduction of $1 a ton has also been made during the week on Northern irons, and No. 2 Foundry can now be bought in large lots at $14.50 Chicago. Southern furnaces have closed several large export deals within the last few days and others are pending. Producers south of the Ohio river are rapidly disposing of their surplus stocks, and with the curtailment of production each week sees an improvement in the situation, notwithstanding the lower prices being made. One manufacturer, who was probably the first to make the $9.50 price, reports that the stock he had on hand, amounting to several thousand tons, has been disposed of, and that his prices have since been advanced to $9.75, at which figure he is holding firm. When the turn in the market comes, there will inevitably be a heavy movement to cover, for melters generally are maintaining a very narrow margin between their consumption and stocks on hand or in transit. We have revised our quotations, and quote as follows:

Lake Superior Charcoal	$17 00 to 18 00
Northern Coke Foundry No. 1	15 00 to 15 50
Northern Coke Foundry No. 2	14 50 to 15 00
Northern Coke Foundry No. 3	14 00 to 14 50
Northern Scotch Foundry No. 1	16 00 to 16 50
Ohio Strong Softeners No. 1	17 30 to 17 80
Ohio Strong Softeners No. 2	16 80 to 17 30
Southern Coke Foundry No. 1	13 85 to 14 35
Southern Coke Foundry No. 2	13 35 to 13 60
Southern Coke Foundry No. 3	12 85 to 13 10
Southern Coke Foundry No. 4	12 35 to 12 60
Southern Gray Forge	12 10 to 12 35
Southern Mottled	11 85 to 12 10
Southern Silveries (4% to 6 % Silicon)	15 35 to 16 35
Jackson Co. Silveries (6% to 10% Silicon)	18 80 to 19 80
Alabama and Georgia Car Wheel	21 85
Malleable Bessemer	15 50 to 16 00
Basic Iron	13 85 to 14 35

Billets.—The pool price of billets was cut $4 a ton last week to meet the competition of independent mills, and both Bessemer and open-hearth billets placed on the same basis. The extras heretofore charged for forging billets have been done away with, and steel for re-rolling or forging can now be purchased at the same price. The inquiry from the International Harvester Co. for 6,000 tons of open hearth billets mentioned last week has been temporarily withdrawn from the market, and we note that the inquiry for 4,000 tons of open hearth billets, reported two weeks ago, has also been held up. Trading is quiet. We quote mill shipments, carload lots, Bessemer and open-hearth billets, $24; small lots from store, 1.30c to 1.40c.

Bars.—A reduction of $6 a ton was announced last Friday in the price of soft steel bars, and this product is now being offered on the basis of 1.46½c Chicago. Hoops and angles have suffered a proportionate reduction. Bar iron has also been reduced $1 a ton and is now being openly offered by Western mills at 1.40c Chicago. It is too early to note any increase in the demand for either product as a result of the change in prices, but the buying was very light previous to the announcement. We quote mill shipments, carload lots, Chicago delivery: Iron, 1.40c to 1.45c; Bessemer steel, 1.46½c; angles, less than 3 x 3, 1.56¼c base, half extras; hoops, 1.91½c. Quotations from jobbers' stocks, iron, 1.55c to 1.65c; steel, 1.60c to 1.70c; small angles, channels and tees, less than 3 x 3, 1.70c to 1.80c.

Sheets.—Demand for both black and galvanized sheets has been very brisk during the week under review. We quote mill shipments, carload lots, No. 27 guage, 2.60c to 2.75c; No. 28 gauge, 2.70c to 2.75c; galvanized 75 and 10 and 5 percent discount. Warehouse trade is considerably better and prices are held firm at the following quotations by local jobbers: No. 22 gauge, 2.70c to 2.80c; No. 24, 2.70c to 2.80c; No. 26, 2.75c to 2.85c; No. 27, 2.85c to 2.95c; No. 28, 2.95c to 3.05. Galvanized from store 75 and 5 percent discount.

Plates.—Little business has been transacted in this product during the week. Prices are week and independent producers are shading the quotations of the leading producer $4 a ton. We quote mill shipments, Chicago delivery, Tank steel, ¼ inch and heavier, 1.75c; flange steel, 1.85c. On lots from jobbers' stocks, we quote: Tank steel, ¼ inch and heavier, 1.90c to 2c; 3-16, 2c to 2.10c; No. 8, 2.10c to 2.20c; No. 10, 2.15c to 2.25c; flange steel, 2.25c to 2.35c, all f. o. b. warehouse.

Structural Steel.—The only activity noted in this material is with jobbers, who report a good demand in small lots. Mill business is quiet to lifelessness. There is no change in prices, and we quote mill shipments, Chicago delivery: Beams and channels, 16 inches and under, 1.75c; 18 inches and over, 1.85c; universal plates, 1.75c; angles, 3 x 3 and larger, 1.75c; tees, 3 x 3 and larger, 1.80c; zees, 1.75c. On lots from store, we quote beams, channels and angles, 3 inches and larger, 1.90c rates; 18, 20 and 24-inch, 10 cents extra; tees, 1.95c rates.

Merchant Steel.—A reduction in price has been made on steel tire, including flat sizes and channels for solid rubber tire, and on toe calk steel, of 30 cents per cwt., and of 25 cents per 100 lbs. on spring steel. Some new business has come up during the week, and prices are firm at the following quotations, which are given on mill shipments, Chicago delivery: Spring steel, 2c to 2.10c; sleigh shoe, flat sizes, 1.60c to 1.70c; concave and convex, 1.95c; cutter shoe, 2.25c to 2.35c; machinery steel, 2.15c to 2.25c base; plow steel, 2.50c and upwards, according to quality; toe calk, 2.05c. Ordinary grades of Crucible tool steel are quoted 6c to 8c; specials, 12c and upwards. Cold rolled shafting in carload lots 47 and in less than carlots 42 percent discount from list.

Merchant Pipe.—Manufacturers report a satisfactory state of trade, buyers in all parts of the country sending in specifications freely. There is no change in prices, and we quote carload lots from mill to consumers, random lengths, f. o. b. Chicago, as follows:

	Steel Pipe.		Guaranteed Wrought Iron Pipe.	
	Black. Percent.	Galv. Percent.	Black. Percent.	Galv. Percent.
⅛ to ⅜ inch inclusive.....	66.35	56.35	63.35	53.35
½ inch	68.35	58.35	65.35	55.35
¼ to 6 inches	73.35	63.35	70.35	60.35
7 to 12 inches inclusive.....	67.35	57.35	64.35	54.35

Less than carload lots, 12½ percent advance over above prices.

Boiler Tubes.—There is no diminution to be noted in the demand, the business of the past week being reported by both manufacturers and jobbers as on a par with the sales of preceding weeks. Prices are without change. We quote carload lots from mill, Chicago delivery, as follows:

	L. W. Steel. Percent.	C. C. Iron. Percent.	Seamless Steel. Percent.
1 to 1½ in.	40.85	37.35	53.35
1¾ to 2½ in.	53.85	36.35	40.35
2¾ to 5 in.	59.35	49.35	} Up to 4 inches.
6 to 12 in.	53.85	36.35	} 48.35

For car lots or less direct from warehouse stock:

	L. W. Steel. Percent.	C. C. Iron. Percent.	Seamless Steel. Percent.
1 to 1½ in.	40	35	37.50
1¾ to 2½ in.	50	32.50	35
2¾ to 5 in.	57.50	42.50	} Up to 4 inches.
6 to 12 in.	50	32.50	} 45

Cast Iron Pipe.—There is no change to report. Orders for this product are largely confined to carload lots, which in the aggregate of the week's sales, amount to considerable tonnage. We quote carload lots, f. o. b. Chicago: 4-inch pipe, $29; 6-inch and upwards, $28; gas pipe, $1 a ton higher.

Rails and Track Supplies.—Orders have been placed during the week for several thousand tons of heavy sections, and for a good sized tonnage in light rails. Specifications are also being received for full quotas. We quote standard sections, 500 tons and over, $28; less than 500 tons to carload lots, $30; less than car lots, $32; second quality rails, $27; 25-pound rails, $31 to $32; 12-pound rails, $34 to $35, with regular differentials for intermediate sizes. Track supplies, mill shipments: Angle bars, 1.90c to 2c; spikes, first quality, 2c to 2.10c; (out of store, 2.25c to 2.35c rates, carload lots) second quality, 1.80c to 1.90c; track bolts, 3½ x ¾, with square nuts, 2.75c to 2.85c per staples, carloads, $2.30; smaller lots, $2.35; galvanized, carloads, $2.70; small lots, $2.75. Bale ties, 82½ and 5 percent discount f. o. b. Waukegan on straight carload lots. Poultry netting, 85 and 5 percent discount from list f. o. b. Joilet or DeKalb, with actual freight allowed not exceeding 50 cents per 100 pounds.

Coke.—Foundrymen are still pursuing the policy of buying only for current requirements, and trade during the week has been light. A change in quotations has been made. We quote 72-hour Connellsville, $2.65 to $2.75 at the ovens; 100 pounds; with hexagon nuts, 2.90c to 3c, with usual differentials for other sizes.

Wire and Wire Nails.—There is no marked decline noted as yet in the demand for any product, the open weather that has prevailed for several weeks past being largely responsible for this condition. Manufacturers look for a curtailment of orders and specifications, however, in view of the approach of cold weather. There is no change in prices, except on cut nails. We quote to jobbers, Chicago delivery, as follows:

Wire nails, carload lots, $2.15; less than carload lots, $2.20. Cut nails, steel, carload lots, $2.05; less than carload lots, $2.10. Plain wire, $2.05 carloads and $2.15 in small lots; galvanized, carloads, $2.35; smaller lots, $2.40. Painted barbed wire, carloads, $2.45; less than carloads, $2.50; galvanized, carloads, $2.75; less than carloads, $2.80; West Virginia grades, $4.75 to $5 Chicago.

Old Material.—There is no demand for old material of any kind. So little has happened during the week that it is almost impossible to quote a fair price for the various kinds of scrap. The market is lower than a week ago and prices are still declining. We quote dealers' selling prices, gross tons, as follows:

Old iron rails	$15 00 to 15 50
Old steel rails (mixed lengths)	9 50 to 10 00
Old steel rails (long lengths)	13 00 to 13 50
Relaying rails	24 00 to 25 00
Old wheels	15 50 to 16 00
Heavy melting steel	10 00 to 10 50
Mixed country steel	8 50 to 9 00

The following are selling prices for net tons:

No. 1 R. R. wrought	$12 00 to 12 50
No. 2 R. R. wrought	10 50 to 11 00
Shafting	12 50 to 13 00
Dealers' forge No. 1	10 50 to 11 00
No. 1 busheling and wrought pipe	9 00 to 9 50
No. 1 cast	11 50 to 12 00
Heavy cast (300 pounds and over)	9 00 to 9 50
Agricultural malleable	10 00 to 10 50
Iron axles	15 00 to 15 50
Steel axles	12 50 to 13 00
No. 1 boilers, cut	9 00 to 9 50
Cast borings	3 50 to 4 00
Mixed borings, etc.	3 50 to 4 00
Wrought turnings	6 50 to 7 00
Machine shop turnings	6 50 to 7 00
Iron axle turnings	7 00 to 7 50
Steel axle turnings	6 50 to 7 00
Stove plate and light cast scrap	9 00 to 9 50
Old iron splice bars	12 50 to 13 00

A. M. Crane, formerly president of A. M. Crane & Co., Chicago, has been appointed selling agent in the Chicago and Pittsburg territory for the product of the new 300-ton furnace at Gadsden, Ala., of the Alabama Steel & Wire Co., which will start to make iron in about ten days. Mr. Crane has arranged with C. E. Louis, 618 The Rookery, Chicago, to handle the Chicago territory. The furnace will make basic and foundry irons.

CLEVELAND.

OFFICE OF *The Iron Trade Review*,
1064 ROSE BUILDING, NOV. 10.

Interest, long centered in the pig iron situation, has been shifted this week to steel on account of the reduction in prices of billets and certain finished products. While the action in readjusting prices is universally commended, a large increase in business is not expected in the near future. The difficulty which corporations and municipalities have had in floating bond issues continues and it is believed that until financial conditions change, there will not be heavy buying. Sales of steel bars made in the past six months have generally been made with guaranty of price in case of reduction. Hence the cut of $6 does not make as radical a change as would seem on the surface.

Iron Ore.—As was expected, the shipments of ore for October were below those of the same month in 1902, although the decrease was not as great as that for September compared with September, 1902, it being 304,569 tons or 9.20 percent. The shipments to Nov. 1 were as follows in gross tons:

	1902.	1903.
Escanaba	4,712,368	3,913,065
Gladstone	81,527	81,355
Marquette	2,365,838	1,885,879
Ashland	3,205,777	2,658,626
Superior	3,706,892	3,712,940
Duluth	4,928,585	5,183,165
Two Harbors	5,009,049	4,948,332
	24,020,036	22,383,350

The decrease for the season to Nov. 1 is 1,636,686 tons, or 6.81 percent.

For the month of October the shipments were:

	1902.	1903.
Escanaba	655,068	560,076
Gladstone	11,261	25,001
Marquette	322,644	234,183
Ashland	434,056	363,342
Superior	592,959	527,710
Duluth	630,074	720,724
Two Harbors	665,364	575,821
	3,311,426	3,006,857

It is not probable that the shipments for November will exceed 1,500,000 tons.

Pig Iron.—Inquiries are numerous and a fair number of sales are being made of small amounts for prompt shipment. Prices are firmer. For Southern, $9.50 for No. 2 is now the bottom price, Birmingham. Furnaces making that quotation have declined offers at 10 cents less. Gray forge is selling at $8.25 Birmingham, or $12.10 Cleveland. Some sellers decline to accept less than $10, Birmingham, for No. 2, while others sell at $9.75, Northern producers are still declining to meet low Southern quotations. We quote as follows for Cleveland delivery, save on gray forge, which is at Valley furnace:

Bessemer	$15 50 to 15 75
No. 1 Strong Foundry	14 75 to 15 25
No. 2 Strong Foundry	14 25 to 14 50
No. 3 Foundry	14 00 to 14 25
No. 2 Southern	13 35 to 13 60
Gray Forge, Valley furnace	13 25 to 13 50
Lake Superior charcoal	17 00 to 17 50

Coke.—The reappearance of a large producer which had not been selling to the general trade has caused a reduction to $2.65 for genuine 72-hour Connellsville, while considerably lower quotations are made on inferior grades.

Finished Material.—Owing to the readjustments of prices which have been in progress, little business has been transacted, as both buyers and sellers have been awaiting official announcements of the new quotations. This information has been received concerning billets, whose price has been reduced $4; steel bars, reduced $6; hoops, reduced $5; and angles under 3 inches $6, but on plates, structural material and sheets quotations nominally remain as they have been, with the expectation that word to announce lower prices will be received at any time. With steel bars at 1.30c, Pittsburg, the price is about the same as that for bar iron, at the mill, the Pittsburg base being seldom used.

Old Material.—Transactions are few and prices weak and irregular. We quote the following gross tons, Cleveland:

Old iron rails	$16 00 to 17 00
Old steel rails (over 6 feet)	13 00 to 14 00
Old steel rails (6 feet and under)	12 00 to 13 00
Old car wheels	16 50 to 17 00
Steel boiler plates	12 00 to 14 00
Malleable iron (railroad)	13 50 to 14 00
Malleable iron (agricultural)	12 00 to 13 00
Heavy steel	12 00 to 13 00

We quote the following net tons:

No. 1 R. R. wrought	$13 00 to 14 00
Mill scrap	10 00 to 11 00
No. 1 machine cast scrap	11 00 to 12 00
Iron axles	18 00 to 19 00
Axle turnings	10 00 to 11 00
Wrought turnings (free from cast)	7 00 to 8 00
Uncut wrought iron boilers	6 00 to 7 00
Grate bars	9 00 to 10 00
Pipes and flues (clean)	9 00 to 10 00
Tank iron	9 00 to 10 00
Hoop and band iron	9 00 to 10 00
Sheet iron	7 00 to 8 00
Wrought drillings	7 00 to 8 00
Stove plate	9 50 to 10 50
Steel axles	16 00 to 17 00
Cast borings	3 75 to 4 00

CINCINNATI.

Nov. 10.

The coke market is easy and quiet with buyers taking only enough for their current needs. Foundry coke is quoted at $2.50 to $2.65 f. o. b. ovens Connellsville.

Pig Iron.—The week has developed nothing of importance. The demand is still light and confined to conservative quantities for immediate needs. There is only one large order in the market and this is an inquiry from a pipe manufacturer in Northern Ohio calling for 12,000 tons of No. 3 and No. 4 foundry for delivery during November, December, January and February. Current business is going at $9.75 to $9.50 Birmingham for No. 2 foundry basis. The $9.50 price is well understood in the trade and nothing lower has been heard. Some of the furnaces have declined to follow the market down to this level. There is no denying the fact that the market is exceedingly dull and correspondence in the offices is of the routine order with nothing that would tend to encourage the view that a revival in the buying was in early prospect. The trade is hopeful that the bottom has been reached, but recognizes that the buyer is now proceeding cautiously for two reasons, the desire to get in at the lowest price and the uncertainty of the outlook for the sale of his product. With finished material declining and a falling off in the foundry business generally the melters of pig iron are not in position to anticipate their wants even at the present level of values. There is nothing new reported in the way of export business, but the trade is not inclined to credit some of the reports that have come out in regard to this feature of the situation. Furnace agents say that their furnaces are not inclined to sell at present prices beyond the first sixty days of next year. The following are the prices current f. o. b. Cincinnati:

Southern Foundry No. 1	$12 75 to 13 25
Southern Foundry No. 2	12 25 to 12 75
Southern Foundry No. 3	11 75 to 12 25
Southern Foundry No. 4	11 50 to 11 75
Southern Foundry No. 1 soft	12 75 to 13 25
Southern Foundry No. 2 soft	12 25 to 12 75
Gray forge	11 25 to 11 50
Northern Foundry No. 1	15 90 to 16 15
Northern Foundry No. 2	15 40 to 15 65
Northern Silvery (8% silicon)	18 65 to 19 15
Southern car wheel iron	18 75 to 19 75

Finished Material.—The market is easy and all quotations are revised this week to a lower level. The concessions have not stimulated any demand and the buying is still on the small lot order to cover current wants. While quotations given represent the general market there is an easy feeling and concessions are obtainable on any desirable orders. Bar iron is easier than last week and a quotation of 1.45c Cincinnati is now an open price on car loads. Steel bars are quoted 1.43c base, half extras, with the retail price 1.90c for iron and steel out of store. Galvanized sheets are being quoted at 75 and 10 percent off. We quote black sheets No. 27 at 2.65c in car lots of 500 bundles. Black sheets out of store are selling as follows: No. 28, 3.00c; No. 27, 2.90c; No. 16, 2.55c; No. 14, 2.45c; No. 12, 2.35c; No. 10, 2.30c. Tank plates are easier and sell out of store at 2.00c for ¼-inch and 2.10 for 3-16-inch. Beams and channels are quoted at 1.90c to 2c from stock, and angles at 1.90c to 2c for base sizes. In merchant pipe the general decline in prices for iron products has not yet been felt but there is a tendency to defer orders in expectation of some marking down of quotations.

MERCHANT PIPE.
(Basing Discounts.)

	Steel Pipe. Black. Percent.	Steel Pipe. Galv. Percent.	Guaranteed. Wrought Iron Pipe. Black. Percent.	Guaranteed. Wrought Iron Pipe. Galv. Percent.
⅛, ¼, ⅜ inch	66.7	56.7	63.7	53.7
½ inch	68.7	58.7	65.7	55.7
¾ to 6 inch, inclusive	73.7	63.7	70.7	60.7
7 to 12-inch, inclusive	67.7	57.7	64.7	54.7

BOILER TUBES.

	Steel Percent.	Iron Percent.
1 to 1½ inch	41.2	37.7
1¾ to 2½ inch	54.2	36.7
2¾ to 5 inch	59.7	46.7
6 to 12 inch	54.2	36.7

Old Material.—The market remains dull and unchanged. There is considerable irregularity in quotations. We quote:

Old No. 1 railroad wrought, net tons	$12 50 to 13 00
Cast machine and foundry, net tons	11 00 to 11 50
Old iron rails, gross tons	18 50 to 19 50
Old steel rails, gross tons	16 00 to 17 00
Old short lengths, gross tons	13 50 to 14 50
Old iron axles, net tons	19 00 to 20 00

Stove plate, net tons	9 00 to 9 50
Wrought turnings, net tons	11 00 to 11 50
Cast borings, net tons	6 00 to 6 50

NEW YORK.

OFFICE OF *The Iron Trade Review*,
ROOM 1909, No. 150 NASSAU ST., NOV. 11.

This city has been the storm center of the iron and steel industry during the past week. Almost everything has shown a downward tendency, especially pig iron and bar iron, which made new low records. Reduced prices also have been officially promulgated in steel billets and soft steel bars. There have been no reductions in the price of steel rails or structural shapes, all reports to the contrary notwithstanding. Officials of the United States Steel Corporation are our authority for the statement that no cut will be made in rails. In the meantime they are pushing their export trade, with gratifying results.

The Dominion Iron & Steel Co. will give up its local office on Dec. 1, and transact all its future business in the East from its Boston office.

Pig Iron.—Not in some time has the local pig iron market been more unsettled than during the past week. Buyers have been in evidence only to the extent of meeting immediate requirements. Prices have been decidedly irregular, particularly in Southerns irons in which there has been considerable activity. There are some large interests holding out for $9.75 for No. 2 foundry, Birmingham, but we know of a sale of 1,500 tons in which an offer of $9.50 was rejected. At what price the order was ultimately placed cannot be ascertained, but little risk is taken in saying that it was not more than $9.25. Southern interests, as a rule, are said to be making more iron than their order books warrant, and it is in getting rid of their surplus stocks that prices go sagging. The car famine in the Birmingham district is now at its worst, and no improvement is in sight. There are not half enough cars to transport iron ready for shipment, and sales agents have received specific instructions recently to urge customers to order their iron at least three weeks before it is actually needed. In Northern irons only fair activity prevails. Furnaces report some heavy business in sight if they will offer concessions, but this they are averse to doing, claiming that even at present prices there is little or no profit. New York prices are as follows: Northern No. 1 X, $15.75 to $16.25; No. 2 X, $15.25 to $15.75; No. 2 plain, $15 to $15.50; No. 1 Southern foundry, $13.75 to $14; No. 2, $13 to $13.50; No. 3 foundry, $12.75 to $13; No. 4 foundry, $12.25 to $12.50.

Billets.—The reduction in price has not brought any noticeable business as yet, but there are some very good inquiries pending. Reports that the pool price is being cut are circulating, but cannot be confirmed. Canadian mills are said to be offering Bessemer at $21 to $22 in the New England territory.

Rails.—The market is a waiting one. While rumors are rife of a prospective cut in prices, we are assured from a high source that none will be made.

Finished Iron and Steel.—The finished material market is sluggish in consequence of a strong belief that reduced prices are imminent. There have been no price changes made in structural shapes, but the best opinion is that some are inevitable. The American Bridge Co. reports heavy orders being held up, pending definite announcement in this direction. During the week it closed a contract for 1,000 tons with the Delaware & Hudson railroad. Plates are dull, buyers holding off until the plate manufacturers conclude their meeting. Iron bars are exceptionally weak, and some jobbing houses confess they don't know what the actual market is. The highest price we hear is 1.40c for this delivery, but better can easily be done. Steel bars are without particular interest, despite the cut. Sheets are a little more active, building having taken a slight brace. New York prices are as follows: Beams and channels, 15 inches and under, 1.75c to 1.90c; angles, 3 to 6 inches, 1.75c to 1.90c; zees, 1.75c to 1.90c; bulb angles, 2.05c to 2.35c; deck beams, 2.05c to 2.25c; sheared steel plates, tank, 1.79c to 1.86c; flange, 1.90c to 2c; firebox, 2.10c to 2.20c; refined iron bars, 1.30c to 1.40c; soft steel bars, 1.40c to 1.45c; steel sheets, in carloads, New York, No. 28, 2.75c to 2.80c; galvanized, 75 and 10 to 75 and 5 off.

PHILADELPHIA.

Nov. 10.

The effect of the reduction in prices of billets and some finished lines is not yet apparent. There is some difference of opinion as to whether the new figures will bring out much business, but no one expects a rush of orders. Capacity of plants is vastly in excess of demand. Considerable business is being done for export, and in that direction lies the hope of relief from the prevailing depression.

Pig Iron.—Business is in a very unsatisfactory condition, which shows little change as compared with last week's report. Exporting has begun, but at lower figures than prevail in the home market. Freights from furnaces in Alabama to British ports, however, are lower than to either Philadelphia, New York or Boston, and in that way they have an advantage of fifty cents to a dollar per ton. Quotations for Philadelphia and nearby points are irregular and uncertain, but about as follows:—

No. 2 X foundry, $15.00 to $15.50; No. 2 plain, $14.25 to $14.75; Standard Gray Forge, $14.00 to $14.25; Ordinary Gray Forge, $13.25 to $13.75; Southern No. 2 X rail shipment, $13.75 to $14.25; Southern No. 2 X on dock, $13.25 to $13.75.

Finished Material.—Pending an all-around adjustment in prices, very little business has been done during the past week. Steel bars have been reduced $6 per ton, the price now being $1.43½ in car load lots. Refined iron is at about the same price as steel. Plates are reduced $4 per ton, making the Philadelphia price $1.53½; structural material is expected to be placed at the same figure, but definite action has not been taken thus far.

Prices for Philadelphia and nearby points we quote as follows for carload lots as a minimum quantity:

Tank plates, $1.53½ to $1.60; steel bars, $1.43½ to $1.50; refined iron bars, $1.40 to $1.45; beams, angles, channels, etc., $1.53½ to $1.60.

BIRMINGHAM, ALA.

Nov. 11.

Prices of pig iron have been quite irregular the past week, the desire with some interests appearing to be a movement of accumulated stocks, making the price a secondary object. The result has been some splendid orders for prompt shipment, with better inquiry than has been experienced with the low market. It is now generally conceded that shipments as a whole are exceeding production. Some export iron has begun to move. We quote this week as follows, Birmingham basis:

No. 1 Foundry	$10 00 to 10 25
No. 2 Foundry	9 50 to 9 75
No. 1 Soft	10 00 to 10 25
No. 2 Soft	9 50 to 9 75
No. 3 Foundry	9 00 to 9 25
No. 4 Foundry	8 75 to 9 00
Gray Forge	8 25 to 8 50
Mottled	8 00 to 8 25
Alabama Carwheel Charcoal	16 00 to 17 00

Receiver for Carpenter Steel Co.

On motion of the council for Richard P. Lydon, a New York creditor, the court at Reading, Pa., Nov. 7, appointed Robert E. Jennings, of Jersey City, N. J., receiver for the Carpenter Steel Co. Lydon alleged that he was a creditor to the corporation to the extent of $100,000. During the Spanish-American war the business of the company was quite profitable, as it furnished large orders for projectiles for the Government.

The company was organized by the late J. H. Carpenter, and was incorporated under the laws of New Jersey, to manufacture high-grade crucible steel, especially ordnance material. The plant was capitalized at $2,000,000. The officers and directors are: John C. Barron, president; Lewis Gregory, secretary and treasurer; R. W. Hawkesworth, H. M. Hawkesworth, D. S. Walton, Clifford Thomson and W. B. Kunhardt. The works of the company occupied an extensive area in North Reading. The liabilities are estimated at $275,000 and the assets at $140,000 to $175,000.

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A PEACE POLICY IN THE EXPORT IRON TRADE.

As year by year the world is growing more civilized there is no reason to doubt that the use of iron and steel will grow apace with such civilization. Measured by a world standard the iron age is yet in its infancy, having obtained a good foothold in a few almost contiguous spots. Using for convenience the figures of last year, although it may be that 1902 showed the United States in a somewhat strained position, the actual net domestic consumption in this country, reduced to tons of pig iron, was 17,820,000 tons produced, plus 1,250,000 tons imported, less 470,000 tons exported, or 18,600,000 tons, which, on an average population of 78,750,000 as estimated by the Treasury Department, is 529 pounds per capita. A very careful summary of the world's production of pig iron puts the total at 43,574,000 tons of 2,240 pounds, which is approximately 61 pounds per capita. In some portions of the globe the consumption was practically nil; we may see an approach to the small per capita consumption over much the greater part of the globe by making deductions for the three great iron countries, the United States, England and Germany. Their actual home consumption left about an even 15,000,000 tons of pig iron or its equivalent to be consumed over the rest of the globe, this being partly made up of exports of these countries, and partly by production outside of them. This leaves a per capita consumption all over the globe, exclusive of the three great iron countries, of a little less than 24 pounds.

Consumption depends mainly upon two factors: cheapness of the article and familiarity of the possible consumer with its uses. Under the present alignment of trade iron and steel products can be delivered to any part of the globe where there is a sufficient demand for them, at prices which can be no very serious barrier to heavy consumption. In the light of the other desideratum this one is negligible. The important element is that as civilization progresses the people who have not been users of iron shall be familiarized with its use and taught its value. It requires no stretch of the imagination to see the trend. Where 80,000,000 people have been using 500 pounds of pig iron apiece, 1,400,000,000 people cannot continue to use but 25 pounds apiece.

The work of teaching the rest of the world to use iron falls upon those countries which have become large users themselves, and are already exporting millions of tons. How shall they go about this work? It involves heavy outlay in educating the people: preliminary missionary work, selling goods perhaps below cost, granting long credits, paying liberal commissions, establishing expositions, and all that. Heretofore it has been a mad rush to get tonnage. At great expense one country or one industrial concern establishes a trade, and others, shrinking from incurring the expense of building up a trade elsewhere, break in and endeavor to take the trade. Then there is either competition ruinous to the producer or high prices ruinous to the consumer. One plants that two ears of corn may grow where none grew before, and the ears are either destroyed in the scrimmage, or the planter is made afraid to risk more seed.

If this course is to be continued, the work of educating the world to use iron will proceed but slowly, and with but little advantage to the educator. Foreign trade will continue to be but the choice of an evil less hard than that of a surfeit in a domestic market.

But if this pioneer missionary work can be done on a broad plan, whereby each one interested is vouchsafed the fruits of his labor, then the yield will be increased as the harvests of our northwest exceed the scanty and chance winnings from the soil of Europe in the middle ages. In one year the United States sent to Australasia 20,000 tons of wire, and to the Argentine Republic 11,000 tons. England sent to Australasia 16,000 tons and to the Argentine Republic 5,000 tons. Surely this could have been arranged in a businesslike way to the mutual profit of both producer and consumer. The German and English foreign trade shows still greater anomalies.

When James J. Hill stated under oath his belief that the harmonious operation of railroads tended to reduce freight rates, he did not propose to insult the intelligence of his hearers; nor it is contrary to logic or experience to assert that were the world portioned off among the great iron producing countries by trade agreements, the result would, with wise administration, be to the immediate benefit of the present consumers, would involve a much more rapid increase in consumption, and would bring much more satisfactory returns to the producers.

Diplomacy between governments has almost stopped strife on the battlefield. Different countries have their spheres of influence, and each accords reasonable rights to the other. The right of discovery and occupation has been recognized for centuries. That commercial battles are less terrible than those which aim at taking human life does not excuse them forever. It should not be strange if there were instituted a new school of diplomacy—commercial diplomacy—which shall recognize, let us say, the right of discovery and occupation; which shall portion out spheres of influence, and which shall, of course, in return for other favors, give the United States a commercial Monroe Doctrine.

It is not absolutely necessary to this plan that the iron industry of each exporting country be a coherent unit. The balance of power in Europe was maintained for generations without formal conventions; yet there would be incalculable advantage if each country were able to act as a unit. Germany can do so with her finely finished syndicates, and the United States has at least a dominant producer which is looked to as almost our sole exporter in the future; but it remains to be seen what could be done in England. Germany has several times made overtures in this direction, and the present situation and outlook in the United States will undoubtedly spur her to greater efforts. Indeed, a delegation of German tube manufacturers has only recently been in the United States for this very end.

FREIGHT RATES AND THE MARKET.

The iron trade is naturally impatient at the slowness with which freight rates are adjusted to changing commercial conditions. From the history of the past three years a clear rule could be formulated that freight rates are advanced right on the eve of a decline in prices, and are reduced right on the eve of a boom. The Valley-Pittsburg pig iron rate can be most easily studied, since it covers a commodity the price of which is sensitive to changing conditions, and large quantities of which are dealt in. All through the boom period of 1899 this rate was 75 cents. On January 1, 1900, when later developments show the force of the boom had been spent, the rate was advanced to 90 cents. Pig iron reached its low point in January, 1901, and started a steady advance which continued through the year. February 1 the rate was reduced to 75 cents. The high point was reached at the end of the year, and January 1, 1903, the rate was advanced to 85 cents. Following three months of inactivity the market then started on a steady and severe decline. In the light of these facts nothing could be more natural than to assume that if this rate is reduced again, it will mark the point for an upward movement in the market.

Much the same story is told by the freight rates on Southern pig, which were maintained at a lower rate through the greater part of last year than the present rate, although this rate represents a tardy reduction, while prices of Southern pig are much lower than last year.

The desire on the part of steel manufacturers for lower freight rates is not a purely selfish one. While they pay out of their own pockets the freights on raw materials, they do not, as a general proposition, pay the freights on finished steel products delivered to consumers. All the important finished steel products are sold at prices based on Pittsburg or Pittsburg district mill, plus the tariff rate of freight to destination. If freight rates on finished products are reduced, the consumers get the benefit, and the advantage to the producer lies solely in the stimulus thus given to consumption, an advantage which the railroads fully share. Indeed, there are cases where a reduction in rail freights causes a loss to producers, where the delivered price is based on the rail tariff, while the manufacturer actually ships by water either direct or to warehouse.

The suddenness with which this country turned from importing pig iron to exporting it, although the imports had paid $4.00 a ton duty, was due to the heavy freight rates within her own borders. Even the foreign pig iron which reached the Central West paid a lower through freight from foreign blast furnaces than the rate from Alabama furnaces to the same points, while these furnaces now export iron to England at a cost not much over half what it costs to move their iron to Northern consuming districts. Without the tariff, the Alabama pig iron producers would at most domestic consuming points be at a disadvantage as regards British and continental producers, so that it is certainly a debatable question whether it is the railroad or the iron industry which gets the lion's share of the benefit from the import duty.

U. S. Steel Corporation Plans.

A meeting of presidents of the subsidiary companies of the United States Steel Corporation was held at Pittsburg, Monday, Nov. 9. One of the principal matters discussed was relative to the removal of the headquarters of the American Tin Plate Co., American Sheet Steel Co., American Bridge Co., and the American Steel & Wire Co., to Pittsburg. The headquarters of the first three companies are now in New York, while the sales department of the American Steel & Wire Co. is in Chicago, and the executive and accounting departments are in Cleveland.

It has been practically decided to move the headquarters of the American Tin Plate Co. and the American Sheet Steel Co. to Pittsburg about the first of the year and it is rumored that these two companies will be consolidated. All of the departments of the American Steel & Wire Co. will probably be removed to Pittsburg, with the exception of the accounting, which will remain in Cleveland for some time. Upon the completion of the new plant of the American Bridge Co., at Ambridge, Pa., which is only a short distance from Pittsburg, that company's largest plant will be located in the Pittsburg district and for that reason it is thought best to have the headquarters of the company located at Pittsburg.

The headquarters of the United States Steel Corporation will of course remain in New York. As this is a holding company there is no need of its removal to Pittsburg, where it is thought the operating department should be.

With the removal of these companies to Pittsburg, the only subsidiary company that will have its headquarters outside of that city will be the Federal Steel Co., whose headquarters will continue at Chicago, in which vicinity its largest plants are located. At the present time the headquarters of the Carnegie Steel Co., National Tube Co. and Shelby Steel Tube Co. are located at Pittsburg, the Carnegie Steel Co. one year ago having taken over the National Steel and American Steel Hoop companies, whose headquarters were also located there.

Chicago Foundry Foremen's Association.

On Oct. 29, in Chicago, about twenty of the foundry foremen met at the Grand Pacific Hotel and organized a local branch of the Associated Foundry Foremen. The following officers were elected: C. E. McArthur, foreman of the Western Electric Co., president; M. C. O'Connor, foreman of Allis-Chalmers, vice president; H. J. Holmes, foreman of Brown Bros. Mfg. Co., secretary; Jno. Balkwill, foreman of Davis & Ludwig Foundry, treasurer; E. Welsch, foreman of Bolter & Sons Foundry, sergeant-at-arms. The membership starts out with twenty-two, and they hope to enroll all of the foundry foremen in Chicago engaged in both brass and iron works before giving up the campaign. A committee on by-laws was appointed.

The United States Coal & Coke Co. has discharged about 4,000 of its employes in its coal and coke plants at Welch, W. Va. No information has been given out as to when the plants will resume.

Iron ore has recently been discovered at Billings, Mo. The analysis taken from seven cars shipped from that place to the St. Louis Blast Furnace Co. gives an average percentage of 58.44 percent metallic iron.

The Labor Situation.

WAGE REDUCTION ANNOUNCED.

Beginning with Jan. 1, 1904, the wages of the tonnage men, rollers, heaters and shearmen employed in the non-union mills of the American Sheet Steel Co. will be reduced about 20 percent. At nearly all of these mills the reductions have been accepted by the men and in many cases mills that have been idle for months have resumed operation. The mills of this company controlled by the Amalgamated Association of Iron, Steel & Tin Plate Workers will, of course, continue to operate on the Amalgamated scale now in force.

With this reduction in wages operative after the first of the year and no limit of output, the American Sheet Steel Co. will be in a much better condition to compete for trade than the independent sheet manufacturers, whose mills are controlled by the Amalgamated Association and still have a limit of output. President Shaffer has received the communication from the Independent Sheet and Tie Plate Manufacturers' Association, requesting him to assemble a special sheet conference to remove the limit of output, and a call will be issued in a few days.

That demands for concessions in wages from the present scale will be made by the independent manufacturers to meet the reductions announced by the American Sheet Steel Co., is certain, but it is doubtful whether the association will break over its rule to never change a scale during the scale year. Unless relief is promised the independent manufacturers, some of them will no doubt break away from the Amalgamated Association entirely and will operate non-union, as the Stark Rolling Mill is doing at the present time. The strike at this plant is settled so far as the company is concerned, nearly all of the former employes having returned to work, while those that have remained out have had their positions filled by sheet workers from the numerous idle mills.

With the past ten days four idle plants of the American Sheet Steel Co. were placed in operation and the fifth will be placed in operation next week. The plants that have resumed operations are as follows: No. 1, Scottdale, Pa.; Hyde Park, Hyde Park, Pa.; Saltsburg, Saltsburg, Pa.; and Leechburg, Leechburg, Pa. The Old Meadow plant, at Scottdale, Pa., will be placed in operation next week.

WARNING FROM SAM PARKS.

Before he left his cell Nov. 7 to begin serving his sentence of more than two years in Sing Sing prison for extortion of money from employers, Samuel Parks, ex-walking delegate of the New York housesmiths' and bridge builders' union, made the following statement:

"It's only taken a little more than seven years for them to get me here. It has been a hard fight and I've lost; that's all. I'm down and out, and I know when I've got enough. Every laboring man in this country should remember me for years to come. I should be a warning to them. I'm the victim of a custom that is older than I am, and that is the habit of having money transactions with employers. That put me here. The salvation of the union lies in stopping that practice at once. They must give up fines, waiting time, back pay for strikes and everything like that. That's the loophole through which this 'grafting,' as they call it, creeps in. The employers never leave any tracks. I could name 100 employers here who have made a practice of using labor unions against competitors. I know of plenty of employers who have made fortunes by the use of money on a young fellow who has never had more than a couple of dollars a day and has been put in authority by his union."

LABOR NOTES.

Efforts to bring about a settlement having failed, President Buchanan, of the Bridge & Structural Iron Workers of America, has ordered a strike the country over, held by the Iron League of New York. It is estimated that 40,000 men in the building trades and 250 buildings under construction are affected by the order. The buildings are principally in New York. Conferences between Buchanan and representatives of the Iron League had been in progress and an agreement was reached on all questions except one and that was as to the disposition of the new Housesmiths' Union formed by the Employers' Association. The old union was asked to take the new one in its organiaztion as a whole and this it declined to do. It is believed that the strike will not be a prolonged one, as the conservative element of the union is opposed to it.

All efforts to settle the strike of the molders at Moline, Ill., have failed. Ex-President Fox, of the National Molders' Union, submitted the last proposition which was rejected, and it now seems to be a case of which side can endure the struggle the longer.

The new scale for the coming year has been signed by the employes of the American Sheet Steel Co., at Scottdale, Pa. It goes into effect the first of the year and carries a reduction of 20 percent in the wages of the tonnage men, rollers, heaters and shearmen. Laborers will not be affected.

The molders employed at the National Iron Works, Duluth, Minn., have declared a strike because the company recently reduced the wages from $3 to $2.70 for a day of 9 hours.

Fifty boiler makers employed in a number of shops in Duluth have gone on a strike. They demand a wage of $2.90 a day for 9 hours instead of the old scale of $2.75 for 10 hours.

After remaining out since the first of April, the striking machinists at the Clyde Iron Works, Duluth, have called their strike off and returned to work.

Arbitration having failed, the International Association of Machinists has given up the general marine machinists' strike for a minimum wage of $3 a day. The strike was inaugurated in May. Some of the strikers' places had been taken by members of the Amalgamated Society of Engineers, an international organization, with headquarters in Great Britian, which has been fighting the International Association for years.

A spectacle, unusual in the last two or three years, of men fighting for work, was witnessed a few days ago at the gates of the Illinois Steel Co., South Chicago, where more than 100 men, largely Poles and Bohemians who went to South Chicago last summer and who were laid off a few weeks ago, clamored for employment. An official sent out word that there was no work for the men, and the rioters attacked the watchman and employes at the gate. They afterwards raided a saloon, breaking in all the windows, and getting access to the liquor. The police finally quieted the disturbance.

Two thousand men were laid off by the Illinois Steel Co., at South Chicago, Nov. 7. In addition to this reduction, 1,200 men who were discharged two weeks ago and who expected to return to work Nov. 9, have been informed that there is no work for them.

Ten thousand coal miners, including employes of the Colorado Fuel & Iron Co., are on a strike in Colorado.

Wages of Puddlers Reduced.

(Special Telegram.)

YOUNGSTOWN, Nov. 11.—The bi-monthly adjustment of wages of puddlers and finishers was made today. The wages of puddlers were decreased from $6 per ton to $5.75. A 2 percent reduction was made in wages for finishing.

Notices were posted Nov. 9 at the mills of the Susquehanna Iron & Steel Co., at Columbia, Pa., that on Nov. 23 the wages of puddlers would be reduced from $4.50 to $4, and those of other workers in proportion. A large number of employes in the riveting departments of the Sternbergh plant of the American Iron & Steel Co., Reading, Pa., have been laid off.

James Campbell, inventor of the Pioneer corn drill, died Nov. 7, at his home in Harrison, O., in his eighty-eighth year. He called his invention the Pioneer corn drill, as it was the first of its kind.

The Otis Elevator Co. has secured a contract for furnishing 60 electric elevators for the London (England) Underground Railway. The contract calls for a money value of between $400,000 and $500,000, not including generators to be furnished by the Westinghouse Electric Co.

The Metal Market.

NEW YORK.

OFFICE OF *The Iron Trade Review*.
ROOM 1909, NO. 150 NASSAU ST., NOV. 11.

Pig Tin.—The market during the past week has been in a depressed condition, chiefly because of the great timidity displayed by buyers. While the statistical situation is favorable, consumers will not go beyond meeting their immediate requirements. Prices are at this writing about ½c lower than a week ago. The London market has been feverish, and prices have sagged off considerably. Today's closings at the Metal Exchange were as follows: Spot to December, 25.25c to 25.50c. London's closings today follow: Spot, £116 2s 6d; futures, £117 5s. Arrivals at Atlantic ports for the month to date aggregate 1,167 tons, with 1,110 tons afloat.

Copper.—The important feature of the week was the reductions made in the official quotations, amounting to ¼c in Lake, and ⅛c in electrolytic. No change was made in casting. Prices in the open market continue to be about ¼c lower. Current trading shows no improvement whatever, and is confined to strictly narrow limits, with reports that surplus stocks are now of important proportions in consequence. The London market has been featureless, and prices remain about the same as they were a week ago. Today's closings at the Metal Exchange were as follows: Lake, 13¾c; electrolytic, 13⅝c; casting, 13½c. London's closings today follow: Spot, £59 2s 6d; futures, £58 2s 6d. Exports for the month to date amount to 2,424 tons, against 3,337 tons for the same period last year.

Lead.—Is without change at 4.50c. St. Louis is slightly lower at 4.22½c. London is weaker at £11 1s 3d.

Spelter.—Is a little easier at 5.90c for spot, with November at 5.60c and December at 5.50c. St. Louis is much weaker at 5.15c. London is steady at £21.

Antimony.—Cookson's is 7¼c, Hallett's 6¼c, and outside brands 5¾c.

Quicksilver.—Is quoted at $47.50 per flask of 76½ pounds in lots of 100 flasks. London is £8 7s 6d.

Nickel.—Is selling at 40c to 47c for large lots down to a ton, and 50c and 60c for smaller quantities.

CHICAGO.

OFFICE OF *The Iron Trade Review*.
1115 MONADNOCK BLOCK, NOV 11.

All metals are weaker and prices have been reduced during the week under review. Buying is light, consumers covering for their requirements on the hand to mouth policy.. We have revised our prices and quote: Lake copper, carload lots, 13⅝c to 13⅞c; casting, 13½c to 13¾c. Pig tin, carloads, 25c; lesser lots, 26½c. Pig lead, 4.40c in 50 to 100-ton lots, and 4½c to 4¾c in small quantities. Spelter, 5.60c, in car load lots, and 6c in small quantities; sheet zinc, 6c; antimony, 7¼c to 7¾c for both Cookson's and Hallett's.

There is a fair demand for old metals, and prices are without change. We quote dealers' selling prices as follows: Copper wire, $11.50 to $11.75; heavy copper, $11.25 to $11.50; light copper, $10.50 to $10.75; red brass, $10 to $10.25; red brass turnings, $8.50 to $8.75; yellow brass, $7.50 to $7.75; yellow brass turnings, $6.50 to $6.75; lead, $3.90; zinc, $4.25; pewter, $17.

Personal.

Veryl Preston has presented his resignation as third vice president of the United States Steel Corporation, and it has been accepted. Mr. Preston was formerly first vice president of the American Steel Hoop Co., and since the absorption of that company into the United States Steel Corporation has been connected with the latter, having supervision of the distribution of its products. It is understood that the office of third vice president has been abolished.

J. P. Price, manager of the Pittsburg district plants of the American Steel & Wire Co., with headquarters at Pittsburg, Pa., has resigned to accept a position with the Pittsburg & Buffalo Coal & Coke Co. He will enter upon his duties with the latter concern on Dec. 1, in the capacity of assistant to the president and manager of accounts.

Wm. Hanson, formerly with the Pennsylvania Iron Works Co., Philadelphia, Pa., has resigned his position and accepted the position of superintendent of the foundry department of the Canada General Electric Co., Toronto.

Inspecting Tube Plants.

(Special Telegram.)

PITTSBURG, Nov. 11.—Officials of the National Tube Co. are now on an inspection tour of the plants, not only of their own company, but the Shelby Steel Tube Co. as well. The party consists of: W. B. Schiller, president of the company; Edward Worcester, first vice president; J. D. Culbertson, second vice president; Taylor Allderice, third vice president; Peter Boyd, general superintendent; T. C. Patterson, mechanical engineer; J. F. Townsend, traffic manager; J. H. Nicholson, manager of the steamless department. The party left here Sunday afternoon, going to Philadelphia, Chester, Thurlow, Middletown, Syracuse, Cohoes, N. Y., Lorain and Shelby, O., Greenville and Erie, Pa. On Thursday the party will arrive at Youngstown, going from there to Ellwood City, Pa., and the trip will end with an inspection of the plants in the Wheeling, W. Va., district.

Rumor Is Discredited.

PITTSBURG, PA., Nov. 11.—Negotiations are reported on for the sale of the plant of the Youngstown Iron Sheet & Tube Co., Youngstown, Ohio, to the Republic Iron & Steel Co. Two officials of the latter company say that it is "all newspaper talk." The price to be paid for the plant is reported at $3,000,000. The Youngstown Iron Sheet & Tube Co. is one of the largest independent concerns entering the iron trade in the past two years, the sheet, skelp and pipe mills being the most modern in the country. About a year ago it was decided to erect an open hearth plant, but after plans were prepared and contracts let the project was dropped.

Will Remove the Limit.

(Special Telegram.)

PITTSBURG, Nov. 11.—The sheet lodges of the Amalgamated Association are now voting on a proposition to call a special convention, to be held here, for the purpose of removing the limit of output in all union sheet mills. The votes of a majority of the lodges have already been recorded and are favorable to a convention. As the lodges are favorable, the limit of output will be removed. This convention will be called on the return of President Shaffer to this city. The action was taken on request of the Independent Steel and Tinplate Association.

Shafting Prices Reduced.

(Special Telegram.)

PITTSBURG, Nov. 11.—At a meeting of manufacturers of shafting, held in this city today, a reduction of 5 percent was made. Turned, cold rolled and round shafting is now quoted at 52 off in car load lots and 47 off in less than carload lots.

Large Contract Awarded

(Special Telegram.)

NEW YORK, Nov. 11.—The Pennsylvania Steel Co. has been awarded the contract for the Blackwell's island bridge for $5,132,985. City legal authorities are confident that litigation against the award will fail.

The Washburn Wire Co., Providence, R. I., has acquired the business and plant of the John Wales Wire Co., Auburn, R. I. The Wales Company has a rod mill, wire mill, nail mill and galvanizing plant and employs about 100 men.

Symanski & Jacques, proprietors of the emery mills at North Tonawanda, N. Y., have decided to locate their plant in Baldwinsville, N. Y., where it will occupy a space of 9,000 feet. The company employes 75 men.

PHILADELPHIA FOUNDRYMEN'S ASSOCIATION.

The 132d meeting of the Foundrymen's Association was held at the Manufacturers' Club, in Philadelphia, on Wednesday, Nov. 4, the president, Thomas Devlin, occupying the chair.

The treasurer reported a balance of $1,949.61 in the treasury and all bills paid.

The officers for the ensuing year, nominated at the last meeting, were formally elected, the secretary, upon motion, casting one ballot for the whole. With three exceptions the old officers were re-elected. Following are the names: President, Thomas Devlin, Thos. Devlin Mfg. Co., hardware and malleable and iron founder, Philadelphia; vice president, A. E. Outerbridge, Wm. Sellers & Co., machinery builders, Philadelphia; treasurer, Josiah Thompson, J. Thompson & Co., general iron founders, Philadelphia; secretary, Howard Evans, J. W. Paxson Co., foundry supplies, Philadelphia; executive committee, Thomas M. Eynon, Eynon-Evans Mfg. Co., engineer and brass founder, Philadelphia; E. E. Brown, E. E. Brown & Co., sash weight manufacturers, Philadelphia; R. C. Oliphant, Trenton Malleable Iron Co., Trenton, N. J.; T. B. Harkins, T. B. Harkins & Co., general iron founders, Bristol, Pa.; and H. O. Evans, Thos. Devlin & Co., Philadelphia; trustees, Thos. Devlin, Josiah Thompson, and Howard Evans; official chemist, Geo. C. Davis, Philadelphia.

During the election the chair was occupied by ex-President P. D. Warner.

The paper of the evening was a departure from the usual order of entertainment. It was presented by James H. Ritter, of the Biddle Hardware Co., Philadelphia, the subject being, "Penn and his City." The paper was historical, descriptive and commercial in character and ably treated of the founder of Pennsylvania and its principal city, and the growth and commercial prominence of the latter. About fifty lantern slides were shown, and the reading of the paper was followed with much interest.

A short discussion on the condition of the foundry trade brought out the views of several of the members. Mr. Oliphant said that in his section the foundry business had seen a rapid falling off in the volume of orders, particularly within the past three weeks. Prior to that time the decline was hardly noticeable, and business appeared to be about as it had been for two years. The labor question appeared to be dormant, and workmen showed a disposition to remain quiet. He did not believe the condition to be anything but temporary, and looked for a change for the better after the close of the year.

Mr. Shelmire said he could agree with Mr. Oliphant's remarks, and thought workmen were quiet because they had obtained all they wanted.

Mr. Haldeman, when asked as to the pig iron trade, said that after his predictions made at a previous meeting he felt like attending a funeral. He said a great deal of pig iron was being sold today much below cost. But that was no reason why it would not yet be lower—there were a great many producers to sell. It was a condition, however, which would correct itself sooner or later. He instanced the decline in prices on Alabama irons, which, he pointed out, had dropped $2.50 per ton during 30 days. And for every reduction made, he said, the large buyers were expecting a greater reduction. This would go on until these large buyers had felt bottom was reached. He did not think it safe for any consumer who had work in hand to refrain from covering in the near future for his requirements, otherwise he is speculating. At the same time he would not advise his buying today ahead of his actual requirements.

Mr. Thompson said his foundry was very busy and would continue so for the remainder of the year.

Mr. Brown said his concern was busy on plenty of orders, and orders were coming in right along. They had enough business in hand to last two or three months. Prices remained as they had been for some time back, and there appeared to be no necessity for making any change.

Secretary Evans announced that there appeared to be a desire on the part of some of the members to have a "Quiz" class, to meet for fifteen minutes at each meeting, for the interchange of ideas on foundry practice. Steps, he said, would be taken to organize the class.

After adjournment the company sat down to the usual luncheon. After the repast, speechmaking was indulged in, and the opportunity taken to welcome D. G. Moore, who had just returned from a trip around the world. Mr. Moore gave a somewhat lengthy description of his trip. He had visited foundries and shops in China, Japan and the Philippine Islands, and was surprised to note how far advanced the natives were in iron and steel work. In Japan he said he saw the keel of a ship laid 700 feet long. In China he saw small Chinamen running as big tools as he had ever seen in American shops. It was folly, he said, to look upon the Chinese as purely a race of laundry people. After what he had seen he judged that ere long they would be a power in the industrial world, and they appeared to be just as well equipped to advance as were the people of this country. While in Japan, he said, he witnessed the coaling of a ship; 2,500 tons of coal were put aboard from barges alongside, in eight hours, by human hands, and without any kind of machinery whatever. From his experience he doubted whether this feat could be performed anywhere in America, with all the elevating and conveying machinery at the country's command. He certainly had never seen it even approached.

Among those present were the following:

Thomas Devlin, Thomas Devlin Mfg. Co.
E. E. Brown, E. E. Brown & Co.
D. G. Moore, Elizabeth, N. J.
P. D. Wanner, Reading Foundry Co., Reading, Pa.
Thos. B. Harkins, Harkins Foundry Co., Bristol, Pa.
J. Thompson, J. Thompson & Co.
Thos. J. Kelley, Thomas, Roberts Stevenson Co.
W. J. W. Moore, Pilling & Crane.
W. E. Arnold, L. & R. Wister & Co.
C. D. Matthews, Camden Iron Works.
H. O. Evans, Thos. Devlin Mfg. Co.
Geo. C. Davis, Chemist, Philadelphia, Pa.
H. L. Haldeman, Pulaski Iron Co., Philadelphia.
A. G. Warren, J. W. Paxson Co.
W. H. Shelmire Jr., S. J. Creswell, Creswell & Waters Co., Philadelphia.
A. A. Miller, *Iron Age*, Philadelphia.
A. D. Wallace, C. R. Brown, E. E. E. Brown & Co., Philadelphia.
F. M. Etting, E. J. Etting, Philadelphia.
R. C. Oliphant, Trenton Malleable Iron Co., Trenton, N. J.
W. O. Steele, Bateman Mfg. Co., Grenloch, N. J.
Augustus Williams, Enterprise Mfg. Co.
J. Henry Pepper, *Iron Trade Review*.
Jas. H. Ritter, Biddle Hardware Co., Philadelphia.
W. A. Devlin, Thos. Devlin Mfg. Co.
H. Huder, W. T. MacDonald, Schaum & Uhlinger.
P. J. Potter, E. J. Etting.
Alex. G. Groome, Bethlehem Steel Co.
H. L. Supplee, Standard Scale & Supply Co., Philadelphia.
Wm. O. Thompson, National Specialty & Mfg. Co., Philadelphia.
H. J. O'Neill, Philadelphia Hdwe. & Mall. Iron Works, Philadelphia.
Jas. J. Devlin, Merrick Haspel, Chas. F. Link, Harry Drinkhouse, Thos. Devlin Mfg. Co.
F. Cooper Pullman, S. B. Gibbons, J. Wesley Pullman, Philadelphia.
W. A. Perrine, Abram Cox Stove Co., Philadelphia.
J. Haag, North Wales Foundry Co.
Howard Evans, J. W. Paxson Co.

Owing to lack of orders, the Oley and the Spruce street sheet mills of the Reading Iron Co., Reading, Pa., were closed Nov. 9. Notices have also been posted at the iron works at Pottstown and Phœnixville that a slight reduction in wages will go into effect at once. The new universal mills of the Reading Iron Co. have also closed down. Other departments have been notified of a slight decrease in wages. It is thought that there will be a general resumption before long, with all wages scaled down to accord with the lower prices of iron and steel.

Manager A. E. Piper, of the new Follansbee tin plate mill, near Wellsburg, W. Va., announces that the building of the plant will be resumed and carried to completion within about three months. Work on the plant was begun in the spring of 1901 and proceeded to January, 1902, when it was stopped. Mr. Piper states that rolling will probably not begin before next spring.

The Republic Iron & Steel Co.'s bar mill at Alexandria, Ind., was started Nov. 2, after a shutdown of several weeks; 300 men were given employment.

NATIONAL MACHINE TOOL BUILDERS' CONVENTION.

(Special Telegram.)

NEW YORK, NOV. 11.—The second annual national convention of the National Machine Tool Builders' Association was called to order at the Hoffman House Tuesday morning at 10 o'clock, by President Jos. Flather, of Nashua, N. H. The roll call by Secretary P. E. Montanus showed an attendance of 25 members, which was increased by further arrivals later in the day.

At the morning session committees were named on nomination of officers and on auditing.

The reports of officers and of standing committees, with unfinished business, occupied the remainder of the session.

The most important development of Tuesday's proceedings was a unanimous agreement to maintain present prices. The discussion in the matter was most thorough. It showed that while pig iron has declined the relation it bore to the manufacture of machines was insignificant. It was argued that wages have not been reduced and were not likely to be. The convention embodied its views by issuing the following statement for publication:

"The National Machine Tool Builders' Association in convention assembled at New York, Nov. 10, 1903, declares there is nothing in existing conditions to warrant a reduction in prices and hereby resolves to maintain the present schedule of prices of machine tools."

The papers read by Wm. Lodge and W. P. Davis were closely followed and the discussion on them was marked by hearty approval of their contents.

William Lodge, in his paper on "The Future of the Machine Tool Trade in the United States," pointed out the growing demands of lathe users. The application of electric drives and greater weight and power for high speed tool steel service kept the trade in a state of uncertainty about the attainable limit. It appeared to Mr. Lodge that there would be in the future calls for two distinct classes of machines in order to meet these strenuous demands, one for the manipulation of steel stock and the other for cast iron, both with individual motor drives. The interest of the association would be conserved by the adoption of some standard for size of the general bearings, the same size of nose for the spindles on the different sizes of lathes, etc. He did not advocate thorough uniformity in the design of machines and he was well aware that it was utterly impossible to secure uniformity in the quality of the work put into the machines, but wherever goods could here be made with these features incorporated it would assist the salesman abroad. The point that chucks and tools under such conditions could be readily exchanged from the one make of machinery to another would be sure to result in a preference being given to American tools made in this manner. An effort should be made to establish uniform terms for the purchase of American goods by foreign houses and the question of long credits is worthy of attention. The long time payments adopted in some lines of business; dry goods, shoes and clothing, for example, would be ruinous in the machine tool trade. The National Machine Tool Builders' Association has all the possibilities of making each individual business more profitable than ever it was before. The paper was a timely consideration of problems of vital importance to satisfactory business conditions and will in the near future be reprinted in full.

The members of the convention and others were entertained at luncheon Tuesday noon as guests of the *American Machinist*. The affair was greatly enjoyed by all who participated.

Members and Visitors Present.

The following members and visitors were registered:

MEMBERS.

Joseph Flather, Flather & Co., Inc., Nashua, N. H.
P. E. Montanus, Springfield Machine Tool Co., Springfield, O.
H. G. Burr, Worcester, Mass.
C. E. Thwing, Draper Machine Tool Co., Worcester, Mass.
Enoch Earle, P. Blaisdell & Co., Worcester, Mass.
A. W. Whitcomb, Whitcomb Mfg. Co., Worcester, Mass.
W. A. Wilson, Wilson Machine Co., Rochester, N. Y.
W. P. Davis, W. P. Davis Machine Co., Rochester, N. Y.
L. C. Anderson, Cincinnati Shaper Co., Cincinnati, O.
B. B. Quillen, Cincinnati Planer Co., Cincinnati, O.
J. B. Doan, American Tool Works Co., Cincinnati, O.
D. A. Engstrom, Owen Machine Tool Co., Springfield, O.
J. W. Carrel, Draper Machine Tool Co., Worcester, Mass.
Wm. A. Greaves, Greaves, Klusman & Co., Cincinnati, O.
Wm. H. Owen, Owen Machine Tool Co., Springfield, O.
Philip Fosdick, Fosdick Machine Tool Co., Cincinnati, O.
W. D. Woolson, Jones & Lamson Machine Co., Springfield, Vt.
James Hartness, Jones & Lamson Machine Co., Springfield, Vt.
Fred Holz, Cincinnati Milling Machine Co., Cincinnati, O.
F. E. Reed, F. E. Reed Co., Worcester, Mass.
V. T. Prentice, Prentice Bros. Co., Worcester, Mass.
C. Wood Walter, Cincinnati Milling Machine Co., Cincinnati, O.
H. C. Hoefinghoff, Bickford Drill & Tool Co., Cincinnati, O.
R. K. LeBlond, R. K. LeBlond Machine Tool Co., Cincinnati, O.
H. J. Hendey, Hendey Machine Co., Torrington, Conn.
C. H. Alvord, Hendey Machine Co., Torrington, Conn.

VISITORS.

A. Luchars, *Machinery*, New York.
Robert Wuest, National Metal Trades Association, Cincinnati, O.
A. I. Findley, *The Iron Trade Review*, Cleveland.
W. V. Gould, Jones & Lamson Machine Co.
D. H. McPherson, National Metal Trades Association, New York.
Wm. R. Wallis, *American Machinist*.
Fred W. Schultz, *Iron Age*.

Second Day's Session.

The second day's session of the association was made up for the most part by the reading of a paper by President Joseph Flather on "What shall we do on a declining market?" The paper was very brief and stated among other things that the present depression in business is similar in many respects to that which prevailed in 1873. The speaker said there was no necessity of machinery being made at a loss and that concerns making a special grade or grades of tools should branch out in other fields while business was poor and also improve their works and manufacturers. Mr. Flather strongly urged that prices be kept firm and said that, if members of the association pulled together everything would go all right until business revived.

An interesting discussion on the paper followed. The election of officers was then held and resulted as follows: Wm. Lodge, Cincinnati, O., president; W. P. Davis, Rochester, N. Y., first vice president; F. E. Reed, Worcester, Mass., second vice president; Enoch Earle, Worcester, Mass., treasurer; and P. E. Montanus, Springfield, O., secretary. President Flather declined a re-election. It was resolved to hold the next convention at Cincinnati at the call of the executive committee. After luncheon the delegates visited the principal places of interest in the city.

Chicago Pneumatic Tool Co. Finances.

Referring to the affairs of the Chicago Pneumatic Tool Co., President Duntley says:

"The company has paid promptly all its interest and sinking fund charges on its bonded indebtedness. It has declared its dividends out of actual earnings, after writing off all expenses, fixed charges, and allowing liberally for depreciation of plants, etc. It has paid its dividends out of its own money. It does not owe a dollar of borrowed money. It has no floating indebtedness, except current monthly bills for material and supplies, which do not exceed $48,000.00, and these we are ready to pay promptly when due. The company has over $1,000,000.00, in quick assets over and above all current liabilities, including current bills, accrued interest, dividends, etc. Its net earnings for the past nine months are $513,224.00. Its present business, and the outlook for the future, is satisfactory in every way. Its European business is growing faster in proportion than the local business. The company is now selling its tools and machines in every civilized country in the world, and is no longer dependent on the American trade for its business. These are facts, and the company's record shows the payment of every obligation, no borrowed money, no current indebtedness, except its monthly bills, and a large surplus in quick assets. The regular annual statements will be made and published at the end of the year."

Molders employed in the foundries in the Youngstown, O., district have been notified of reductions in wages, to take effect on Nov. 15. With few exceptions the molders have been reduced to the minimum rate of $3 per day.

CHOSEN DIRECTOR OF CARNEGIE SCHOOLS.

(Special Telegram.)

PITTSBURG, PA., Nov. 11.—Arthur Arton Hamerschlag, of New York, has been invited by the board of trustees of the Carnegie institute to accept the directorship of the Carnegie Technical Schools of Pittsburg. Mr. Hamerschlag has been for many years a consulting engineer in electrical and mechanical affairs and has served in that capacity in Cuba and Mexico. He was born in Nebraska 37 years ago and received his early education in the schools of Omaha and New York. This was followed by private instruction in special branches and courses in physics and mining at Columbia University. Mr. Hamerschlag's connection with trade schools has been chiefly with the institutions supported by J. P. Morgan. For 12 years he has been superintendent of St. George's trade schools of New York; for 10 years consulting engineer of the New York trade schools, under the presidencies of Colonel Aĉhmuty and Robert Fulton Cutting, and for seven years consulting engineer of the Highland Falls trade school, which he organized and which was endowed by Mrs. J. P. Morgan. He has also been connected with the Boys' Preparatory trade school of New York, and the Lyndhurst Club, a trade school maintained by Miss Helen Miller Gould at Tarrytown, New York.

National Founders' Association.

(Special Telegram.)

WASHINGTON, D. C., Nov. 11.—The National Founders' Association met in its national convention at the new Willard Hotel this morning, the vice president, I. W. Frank, of Pittsburg, calling to order in the absence of President F. T. Towne, of Stamford, Conn., who has been ill for the past month. There were about 150 members present at the opening session and the attendance will probably reach 200.

Mr. Frank spoke regretfully of Mr. Towne's absence and then referred briefly to the work of the past year, during which 218 labor troubles had been handled. The magnitude of the work involved, Mr. Frank said, was not generally appreciated, and there had been some dissatisfaction because the committee could not be in many places at once. He reminded the members that wages were not the whole question in such organizations as many other important issues are to be considered. The object of the association is not to crush unions, but to do business on business principles—a business organization of workmen for the mutual benefit of the conferring organizations. The keynote of the association, as with the Stove Founders' Defense Association, which was its prototype, is co-operation with organized labor. Since it is the union man upon whose action the employer desires to exercise a restraining and modifying influence, the association has agreements with the union, mostly local in scope, and has been conferring with the union with a view to a national agreement. In all agreements the association insisted on the right of members to employ or discharge and to operate their plants in such a way as they see fit.

A letter from President Towne was read, in which he called attention to some changes in policy which would increase the usefulness of the association. He said the question is no longer whether employers' associations are desirable, but how they can best be organized and made effective. The great thing needed was to secure an appreciation on the part of the membership of the importance and magnitude of the work so that an adequate executive force might be maintained to carry it on.

The announcement was made that President Roosevelt would receive the members of the convention at the White House at 2:30 Thursday afternoon.

Committees Appointed.

The following committees were appointed:

Order of Business—H. N. Covell, Brooklyn; J. H. Webster, Cleveland; H. A. Carpenter, Providence, R. I.

Credentials—J. D. Leary, of Cincinnati; H. Van Atta, New York.

Press—A. C. Pessano, Lake Erie Engineering Works, Detroit; Thos. E. Durban, Erie City Iron Works, Erie, Pa.

Treasurer John R. Russel, of Detroit, read a statement of the financial operations of the past year, giving expenditures on arbitration conferences and strikes. The report was referred to an auditing committee.

The commissioner, John A. Penton, then read his report.

A. E. McClintock, secretary of the association, followed with his report for the year.

Secretary's Report.

The work of increasing the membership has been pushed vigorously the past year as the report shows, and the net gain, after deducting withdrawals, was 56, making the present membership 536. These members employ a total of 27,242 men, this number including floor and bench molders, molding machine operators and specialty molders, coremakers, molders' and coremakers' apprentices and unskilled coremakers.

The question of incorporating the association was under consideration in the past year and an adverse recommendation of a committee appointed to consider the matter was adopted by the administrative council.

John A. Penton was elected commissioner of the association early in the year, and James S. Sterling, of Wilmington, Del., was made vice commissioner. Later Mr. Sterling's resignation was accepted. The resignation of Mr. Penton as commissioner also came before the administrative council and a committee consisting of F. T. Towne, Wm. H. Pfahler, John R. Russel, O. P. Letchworth and H. W. Hoyt was chosen to recommend a successor. This committee, at a meeting of the administrative council at Atlantic City in August, presented the name of O. P. Briggs, of Minneapolis for the position.

A vacancy in the first district committee, caused by the inability of Geo. H. Gibby, of Boston, to serve, owing to ill health, was filled by the appointment of Henry A. Carpenter, of Providence, R. I. In the third district J. H. Schwacke, of the Wm. Sellers Co., of Philadelphia, was appointed to fill a vacancy on the committee of that district caused by the resignation of James S. Sterling.

A report was made by the secretary of the amounts appropriated by the administrative council for the support of members involved in labor difficulties. Seven strikes in particular had had special attention—those at Birmingham, Ala., Cincinnati (coremakers), Cleveland (light gray iron foundries), A. Carpenter & Sons, of Providence, R. I., Clyde Iron Works, of Duluth, Toronto, Ont., and Moline, Ill. (machinery molders).

The plan referred to at the last annual convention of the association, of giving association cards to non-union workmen who had worked for 60 days, and with satisfaction, under the auspices of the association, was reported upon. These cards are now much sought for by molders and coremakers who have never before been in the association's service. In a number of cases the association has entered into yearly contracts with such workmen. The bonus system, which was first employed by the association in the Cleveland strike, has been improved by experience and is now working with far more satisfaction and economy than at the beginning.

The convention then adjourned until 9 o'clock Thursday morning.

Convention Notes.

Tuesday the administrative council met to prepare for the work of the convention. It is understood that Isaac W. Frank, of Pittsburg, will be elected president for next year. His work as presiding officer today has given great satisfaction.

A very pleasant affair was the dinner of members of present and former administrative councils, given last night. Commissioner Penton was presented with a diamond ring. O. P. Letchworth, who spoke on behalf of the donors, made feeling and appreciative reference to Mr. Penton's work for the N. F. A., and the bonds of esteem which had tightened with each succeeding year of his association with the officers of the organization.

Commissioner's Report.

The commissioner gives a comprehensive review of the relations of the association with the Iron Molders' Union in the past year. Referring to the unusual business activity of the year, he says that this has naturally given an extraordinary

[Continued on page 53.]

The Bottom of a Green Sand Mold.*

BY THOS. D. WEST.

In selecting the subject for this meeting, I have, as will be noted by the title, made a radical departure from the character of papers heretofore presented to your association. I trust however that the new thought presented and the advocacy of standards for making beds will assist me in deeply interesting all those present in the direct work of the molder and the principles involved in making green sand castings.

Following wrong lines in forming the bottom part of green sand molds is to be seen in nearly every foundry. When molders are left to follow their own ideas, it is uncommon to find two working on the same lines, and the chances are that many will be following incorrect methods or working unintelligently.

Before proceeding to illustrate methods commonly practiced, it will be best to define principles involved in the right construction of mold bottoms or beds.

Two of the first lessons we learn when engaging in the art of founding, is that molten iron will not lie quietly upon dense damp or rusty bodies, and that it exerts pressure according to the height of its head or column, similar to water or other fluids. The way some molders work would lead one to believe that these fundamental principles were only discoverable after many years of sad experiences. Having knowledge of the fact that molten iron will not lie quietly upon dense damp bodies, and that as height of head increases, so does pressure, we have the foundation of intelligent manipulation in making mold bottoms or beds. In stating these principles we have first to ask, why will molten iron not lie quietly upon dense damp bodies? It is because the metal's heat creates a steam, which will force it to escape the road of the least resistance, and this as a rule is up throught the molten metal when poured into rammed molds. This escape may be of a mild character or so violent as not only to cause scabs, etc., on a casting, but blow the metal in a mold so much as to make what is left of a casting nearly unrecognizable when compared with its pattern. In considering head pressure we have but to recognize the fact that with equal pressure of metal we must have equal density or hardness of mold body under it, if we wish the bottom of a casting to be true to its pattern.

Having briefly considered the effects of steam and pressure, it is next in order to treat of the effects of their combination and the conditions which should prevail to best counteract their evils in constructing mold bottoms. The dampness or "temper" is controlled by molders generally much better than the density. The chief trouble lies in obtaining a proper and uniform density. The ideal density lies in having the face of a mold the softest and the under body sufficiently hard or solid to withstand the head pressure or strains that will be exerted upon it when the mold is poured, and which if not uniform can cause thin castings to warp or crack, due to disarranged or unequal thickness, or heavy ones to have swells on the bottoms, or give way so as to cause burst-outs and lose castings.

To overcome evils of dampness and density, we resort to venting. This can often prevent the injury that errors in "tempering" and ramming sand can cause, provided it is done intelligently. While venting is a necessity with most all kinds of bottoms, excepting with most "open sand" work, there is a limit to its utility. Venting cannot prevent ill results where the surface sand is excessively damp, fine or is rammed too hard. We can ram the under body of a bottom excessively hard and all will work well if it is well vented and the surface is of open sand, dry as can be worked and sufficiently soft. As a rule the damper or finer the sand, or harder the ramming, the more venting required. This leads to the inquiry, how damp should sand be mixed, how fine should it be used, and what degree of hardness is desirable?

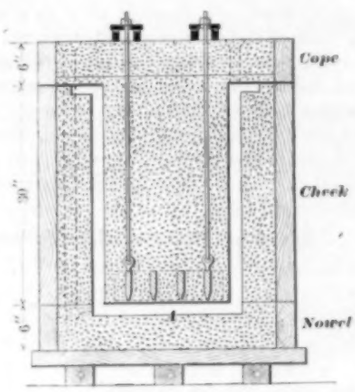

Fig. 1.

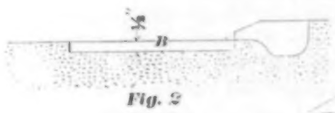

Fig. 2.

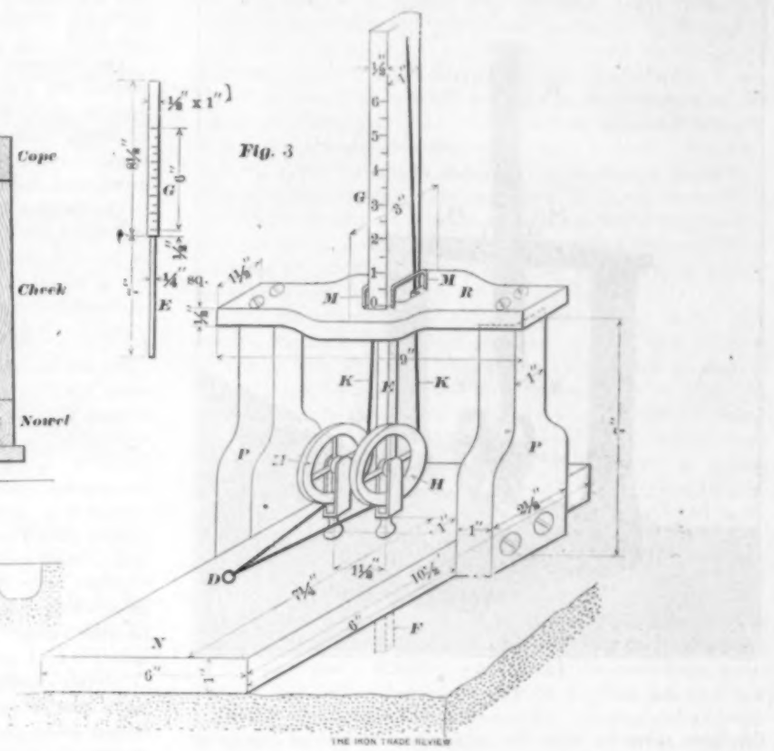

Fig. 3.

Comparison of Compression in Dry and Wet Sands.

The drier the sand can be used the better, as the drier the sand the less steam created to cause trouble and labor in venting. Dampness is required wholly for the purpose of maintaining forms, affording an oportunity to finish them and to prevent the rush of flowing metal washing away the sand. Excepting the first inch or two of the surface, the bottom of some molds could be sustained with sand in a dry powdered state, were the sand sufficiently coarse to admit the downward escape of the steam that would be generated from the damp surface sand. On account of the inconvenience of using all dry sand and the risk of the damp surfaces parting from it during the action of pouring, damp sand is used for the under body, as well as for the surface. A study of this point will show that the degree of dampness necessary for the hard body under the surface was only such as would be sufficient to allow the sand to pack solid and hold the form of vent holes, as it can be readily seen that if a vent wire was passed through a body of dry sand or dust, the hole left

*Read before the New England Foundrymen's Association, Boston, Mass., Nov. 11, 1903.

by the removal of the wire would fill up with sand, just as if the wire was passed in and out of a body of water.

Another factor to be considered in connection with the point just raised is that dampening sand has the effect, up to a certain limit, of decreasing its density, so that in using the "tempered" or mixed sand, as in the ordinary green sand mold, it must be rammed in order to transform it back to something of the density that exists when the sand is in a dry state. If we dampen the sand to the degree of making a mud, then we again effect a density much nearer to what exists when sand is in a dry state. In other words dry sand packs itself similarly to mud; whereas when it is in the mean state between dust and mud we must ram it to obtain a similar density. I have found by tests that I made for this paper, that a pail full of sieved loose tempered sand can be rammed down about 3 inches while a pail of sieved dry sand will go down by ramming but about 1 inch. The same sand made into mud cannot be depressed or rammed down to any perceptible degree. Then again a pail of the same sieved dry sand tempered suitable to ram molds will fill the same pail 1½ times, whereas when in a mud state it will equal closely

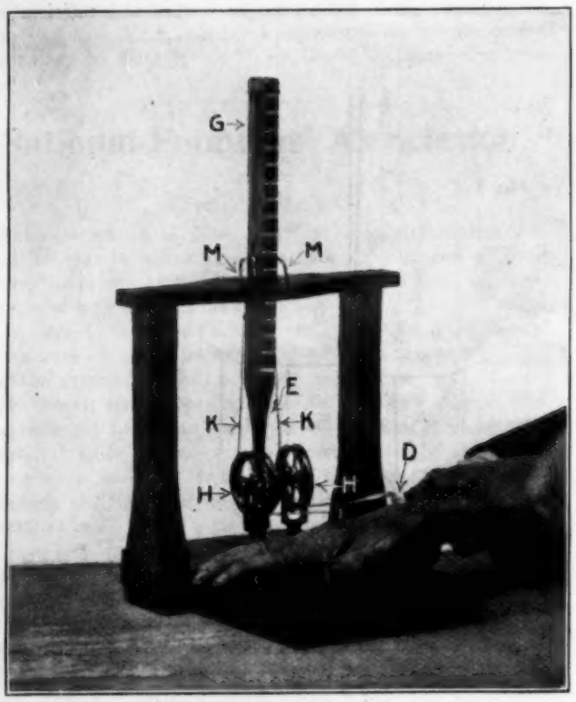

FIG. 4.

the space taken up with dry sand, when packed as closely as it can be rammed.

Fine and Coarse Grades of Sands.

The grade of sand best to use depends chiefly upon the thickness and design of castings. In small plate work, the lighter the castings the finer the sand should be. This is not necessary on the ground of making it practical to produce variation in the thickness of castings or decrease the loss by bad work. There would be less loss of light castings by the use of coarse sands than by fine, where the question of smooth and sharp surfaces is ignored, but as this is one of the chief points sought in making light work, sands are used as fine as they can be worked without creating too great a loss in castings by not running full and "blowing" to make unsound or rough surfaces.

Smoothness and sharpness of face in light castings is chiefly dependent upon the character of sand used. It is surprising the difference in smoothness and in obtaining sharp, clean full indentations that is produced by different sands.

Coarse grades of sand are necessary for heavy work, chiefly on account of the thicker bodies of metal creating extra gases, which must have a freer exit than fine grades of sand can give. By extra skill, care and labor, fine sands may often be used with the result as in light castings of giving smoother surfaces, etc., but in many classes of very heavy castings or complicated light ones, the chances of blowing, scabs and total losses would be so great as to make it unwise to attempt their adoption.

There is a great difference in the physical character of sands. Some localities will produce a character of sand that cannot be found in any other section of the country. The foundry that has the best sand to be found for its work in its own locality, is in luck. There are few things more harassing to molders and management than being compelled to work with inferior sands.

Testing of Degrees in Hardness of Rammed Sand.

The density or hardness that is best for the face and under body of a mold bottom may be said to be due chiefly to the speed of pouring and the head pressure of the metal, the extreme of which can be demonstrated in the making of a bottom for a deep pot with a 36-inch head and an open sand plate with a head of ½ inch, as seen in Figs. 1 and 2. In ramming the bottom A for the pot it must be made very hard or of such a density as would be penetrated ½ inch with a pull of 25 pounds by the hardness testing device seen at Fig. 3 and to be described later on, whereas with the "open sand" plate B, Fig. 2, it required but a pull of 2 pounds to penetrate through the packed surface to the under body of soft sand.

The extremes of hardness presented by Figs. 1 and 2 illustrate the wide variation that exists in demanding different degrees of hardness and displays in a measure the delicacy of touch, high skill and sound judgment that founding demands of the man competent to make the great variety of green sand castings that exists in many foundries.

The molder that can change from any one job to another and make perfect castings without making from two to three or more to obtain one good one is worthy the name of artist, for in no other trade is there the high exaction for the work of hand and mind as in that of the molder.

Systematic Plans for Making Bottoms.

Foundries having a large business in different classes of work, have to a greater or less degree, experienced losses in casting and in obtaining imperfect work by reason of unsystematic shop methods and unintelligent workings of molders. These evils should cause us to welcome any means to establish more uniform methods of working. There is no reason why in the making of bottoms greater uniformity of system should not exist. If, in foundries allowing molders to follow their own ideas, duplicate patterns of fire fronts, for example, were distributed to four different molders, we would most likely find one rolling it over, another one resting it on four corners and tucking it up, another sledging it down into a bed of soft sand and another making it on a hard bed. A perfect casting could be produced by either method if made by a careful and skilled molder, but as these are rare, we would more likely not find a perfect casting in the bunch. If, instead of this go-as-you-please plan, each shop would have some established plan that had proven a success for all to follow, there would be a noticeable reduction in bad work. It is not to be expected that all shops would follow like methods, nevertheless these are workings that could be made much more universal than they are. This is especially true in the matter of making bottoms or beds and in which there is great need of some standard test for hardness. In my study to offer something new here that would serve for such a test, I present the device seen in Figs. 3 and 4.

By resting this device upon the face of a mold or above it and pulling on the spring balance as seen at D, the compressor or hardness testing rod E is pressed downward into the bed of sand or bottom at F according to its degree of hardness or density, and which is told by the scale of inches at G and the weight pulled by the steelyards, its limits being in pressing the compressor rod D from the fraction of an inch to 6 inches and pulling the steelyards from one to twenty-five pounds. While the hardness tester is limited to a depth of 6 inches it will be seen that this is sufficient when it is stated that rammed courses rarely exceed this depth.

The sheave wheels H, also the steelyards D can be purchased in most any hardware store. The compressor rod E should be made of hard wood. The strings K should each

be strong enough to lift 40 pounds and kept back from getting caught in the compressor rod's guides by little staples as seen at M. The base N, uprights P and top R are all made of pine or other soft wood. The construction need not cost over $2.00. With the above explanation and the two views shown, any one should be able to construct a machine. The ideas presented in this device could be embodied in a machine made after the plan of scales by our scale manufacturers and no doubt give a machine better for the purpose than the one shown.

The adoption of such a device as shown in Figs. 3 and 4 should afford the management of many foundries a much better control of the molder's work in making beds or bottoms for both light and heavy work than exists at the present day. Take the case of light plate work, stoves as an example, where it is important to hold a uniform weight in duplicate casting. Here we find the difference in molder's ramming, which can vary greatly in hardness, will make some duplicate casting much heavier than others, especially where new men are brought into action. The evils arising from having excessive differences in weights need no recital here. Suffice it to say that with a device like Figs. 3 and 4 the management should be able to sustain standards for hardness, so that by the time a new man, or an old one on a new job, had rammed two or three molds he should know how to gauge his ramming to obtain the hardness desired and thus avoid the ramming of 50 or more molds to give undesirable weights, with accompanying losses, before correcting the evil.

In the case of heavy work we would be enabled to fix

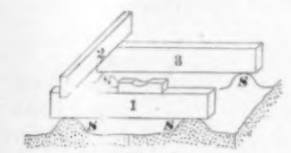

Fig. 5

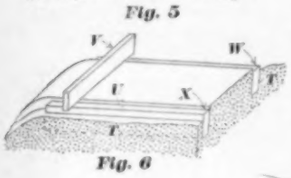

Fig. 6

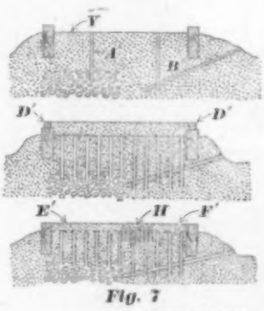

Fig. 7

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standards for hardness that could greatly prevent swells, scabs and other evils to come from un-uniform and incorrect hardness of beds. The more one thinks of the advantages to be gained by having some arrangement whereby standards for hardness could be adopted the more he will perceive its value.

Standard Methods for Making Beds.

There are two classes of beds—soft and hard. There is no doubt more difference displayed in molders doing work in this line than others, although it is a line which greatly admitted of being standardized. To demonstrate the practibility of standardizing the work, I will illustrate plans for making beds (which I have used successfully for many years) in a general manner, avoiding the details in order not to tire the patience of any that may be familiar with such work.

The first work in making a bed after the sand has been tempered is to level the straight edge. This is best done by resting the ends on mounts as at S, and then bring them to a level in the order of Nos. 1, 2 and 3, Fig. 5, after which the space between the mounds S is all filled in and tucked up solidly to look like T, Fig. 6. In making a soft bed, sand is filled in and struck off to project ⅜ inch to ½ inch above the top of the straight edge as seen at U. This done the projecting body U is knocked down all over the bed with the straight edge V to a level of W and X. On this "open sand" castings ranging from ½ inch to 1½ inches thick can be made. By having the projection U ¾ inch high "open sand" castings 2 inch to 3 inches thick can be made on soft beds without the use of a vent wire in any manner. This method insures a definite action, and results in obtaining true castings, but instead of all molders following such plans many are more likely to shovel in their sand to a height of 2 inches to 3 inches above the straight edges, and pound its face down with the flat of a shovel, piece of a board, or with the palm of the hand; methods that are sure to render more or less un-uniformity in the face of a bed and hence give imperfect castings.

In making hard beds we must resort more or less to venting, and success in preventing scabs often depends upon the method of venting practiced. A hard bed can be used for open sand casting as well as coped ones, although as a rule they are used for coped work. A hard bed that will work for "open sand" casting is made by ramming the sand with pein and butt up to the top of the straight edge and striking off the sand within ½ inch to ¾ inch of the top of the straight edges as shown at Y, Fig. 7, and then closely venting all the bed down to cinders as at A′ or to connect the down vents underneath as at B′. After the bed is all vented, the hand is passed over the vent holes to close their top openings and sand is then shoveled on and struck off ¼ inch above the straight edges as seen at D′. This done the guide strips D′ are removed and the projecting sand is then knocked down with a straight edge to the level seen at E. On this we can cast "open sand" plates from 1 inch to 4 inches or more in thickness. For plates under ¾ inch thick the ½ inch to ¾ inch of compressed sand F′ would be best vented with a fine wire as at F′ to connect with the larger under vents. So much for hard beds for "open sand" castings. In turning to beds for coped work we vary the operation merely by harder ramming of the body Y, varying the distance between Y and the top of the straight edges and also in the thickness of the pieces or thickness D′. By these variations we can obtain any degree of hardness necessary to the work in hand. The contrast to these systematic methods lies in placing go-as-you-please heights of sand, patting it with the hand, tramping it down with the feet or running over the surface with pein and butt, in connection with all styles of careless and unreliable methods of venting, to describe all of which would occupy more than my allotted time.

This paper should demonstrate that there can be systematic methods for making bottoms or beds and in view of the present erratic and bad practices followed in making such, I would suggest some action being taken to have the subject brought before the American Foundrymen's Association with a view to the ultimate adoption by that national body of standards for making beds. This would surely go a long way in causing our molders to work more systematically, lessen the worry of managers and greatly decrease bad work and losses in our foundries.

Report of the Otis Steel Co.

At the recent meeting of the Otis Steel Co., Cleveland, in London, Josiah T. Smith, who presided, said that the results of the past year's business, which might be considered satisfactory, had been achieved in spite of the high price of raw materials, while the selling prices of the company's chief products had not been proportionately high. During the year £25,251 was spent on new plant, apart from upkeep and repairs, and this had been written off to depreciation before paying any interest to the A and B debenture stocks. Since the closing of the accounts, £6,000 had been obtained from the sale of part of the company's land to the Lake Shore & Michigan Southern Railroad. This sum would be placed in the hands of the trustee for the prior lien debenture stockholders. It was intended to use the money for the redemption of that stock, and meetings of the prior lien A and B debenture stockholders would be called to sanction such alterations of the trust deed as were necessary. The two managing directors, J. Edward Touch and Archibald P. Head, intend shortly to visit the works at Cleveland.

The wire nail exports last month aggregated 2,578 tons, as compared with 1,443 tons for September. The shipments to Great Britain and the far East were the heaviest. To British ports 728 tons were forwarded in 32 lots. Two hundred and fifty tons went to Liverpool, 197 tons to Manchester, 134 tons to Bristol, 121 tons to Glasgow, while the balance was about equally divided between London, Hull, Leith and Belfast. To China and Japan 622 tons in four lots were shipped. Three hundred and eighteen tons went to Australia in three shipments.

STEEL TIES ON THE BESSEMER & LAKE ERIE R. R.

One of the few cases of the use of metal ties in this country is on the Bessemer & Lake Erie R. R., and it is interesting to note that this particular experiment, with about 1,000 ties, was instituted by Mr. H. T. Porter, chief engineer.

The tie, shown in Fig. 1, consists of a length of rolled trough plate (Carnegie section M — 14, ¾ x 3¾ x 9½ inches, forming an inverted trough. The tie is 8 feet 6 inches long, 5 inches wide on top, 8¾ inches inside on the bottom, and 3½ inches deep inside. Half the ties (Type A) have a central diaphragm made of the piece of angle iron ⅜ x 5 x 3 inches, riveted inside the top of the tie and projecting below the tie. The other ties (Type B) have two diaphragms, near the ends,

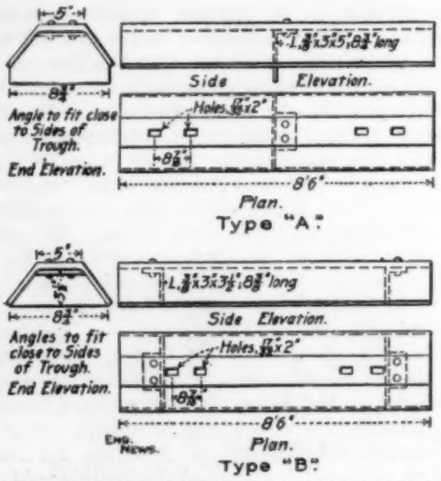


FIG. 1—EXPERIMENTAL STEEL TIES ON THE BESSEMER & LAKE ERIE RY.

formed of angles ⅜ x 3 x 3½ inches, and these do not project below the body of the tie. These diaphragms are for the purpose of anchoring the ties in the ballast and so holding them in line. At each rail seat are two rectangular holes 17-32 x 2 inches, 8 7-16 inches c. to c. In these holes are fitted bolted clamps or clips of a pattern which has been extensively used for metal ties in Germany. The body of the clamp enters the hole and its flange bears on the rail base. The clamps are made in five sizes, 3 to 3½ inches wide, thus allowing for adjustment of gauge on curves. The ⅞-inch bolt has a T-head which passes through the hole and is then turned so as to take a bearing inside the tie. The weight of the tie is about 205 pounds.

These ties were laid in May and June, 1901, on 2,135 feet of

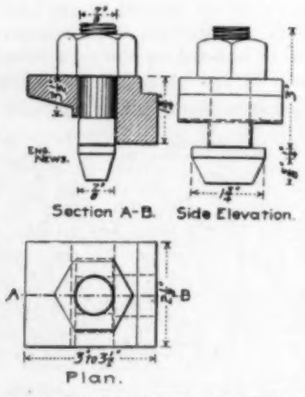


FIG. 2.—RAIL FASTENINGS FOR STEEL TIES.

track a little distance south of Osgood, Pa.; most of them being on a reverse curve of 4½ degrees and 9 degrees. The track was ballasted with furnace slag, and a portion of this track was given a final surfacing with limestone screenings by the pneumatic machine invented by the late Mr. E. J. Patterson, of Titusville, Pa. The screenings were blown under the tie by an air jet, so as to fill all voids and make a solid bed. Until the end of April, 1902, all the traffic went over this track, but since then the southbound ore trains and about half the northbound freight trains have been run over the cut-off between Osgood and Kremis. The passenger trains, local freight trains and about half the northbound through freight trains still run over this track. The 9 degree curve at the north end has not been surfaced or lined since the early part of June, 1901. It has been necessary to surface the south end on account of its being on the soft roadbed.

The ties were put in for experimental purposes, particularly as to comparative cost of maintenance of way, and it was recognized at the time that they had certain objections: (1), they contained too much metal; (2), it was difficult to line the track after it had been surfaced. As the life of the tie would probably be greater than that of the rail, the fastening was such as to allow of changing the section of rail without having to change the ties. Failure to provide for this led to the removal of the Chester steel ties on the Huntington & Broad Top Mountain Ry.

The experience on the Bessemer & Lake Erie Ry. indicates that a tie of trough shape can be tamped properly with a tamping pick, and that on account of the rigid and secure rail fastening, there is less wear of rails on the curves. Two different designs are now being prepared, as suggested by the experience with the present ties. It may be noted that the reduction in rail wear on curves, due to fastenings which hold the rails and tie rigidly together (which a spike fastening cannot do) has been observed also with steel ties and concrete ties on the Lake Shore & Michigan Southern Ry.—[Engineering News.

National Association of Boilermakers.

(Special Telegram.)

CHATTANOOGA, TENN., Nov. 10.—Three questions will present themselves for consideration at the meeting of the National Association of Boiler Manufacturers, now in session in this city: First the necessity for a complete revision of the present boiler laws of the United States steamboat inspection service; second, the necessity of employers uniting to combat the arrogance of organized labor; third, foreign trade extension.

Regarding revision of the boiler laws, Colonel E. D. Meier, chairman of the association's committee on the subject, says:

"An entire rearrangement of the sections of the law is imperative to avoid trouble, and actual conflict in statements must be eliminated. Questions of designs should come first, then materials and their inspection; then test, factors of safety, methods of workmanship, and finally matters of location, connections and accessories. An entire revision at the hands of competent experts seems the only solution of the question; and this committee should consult all the main interests affected: viz., the inspection service, the navy revenue service, naval architects, marine engineers, boiler manufacturers, plate manufacturers and shipowners. The requirements and necessities of each of these great interests harmonized in the full knowledge of conditions and problems which a joint discussion by these experts would evolve, will give us a law and an inspection service commensurate with the vast interests of the foremost manufacturing people of the world, and one which will stimulate in place of repressing the development of that maritime superiority, the attainment of which has become a recognized necessity."

The United States Supervising General of Steam Inspection will be present at the convention and a number of others high in authority in various interests allied with boiler making are to attend.

The Japanese house of Mitsui & Co. has inquiries in hand for 6,000 tons of bridge material and 4,500 tons of rails for the Fusan-Chelmulpo road. American figures are also being requested on several hundred tons of wheels, axles and trucks for Japanese railroads.

The Greene-Ennis Fence Co., Reading, Mich., is now having looms built for the purpose of weaving its fence. This will take until about Feb. 1, about which time the company expects to commence the erection of a foundry building. The company intends to manufacture all kinds of farm and field fence, and to be in the market early in 1904.

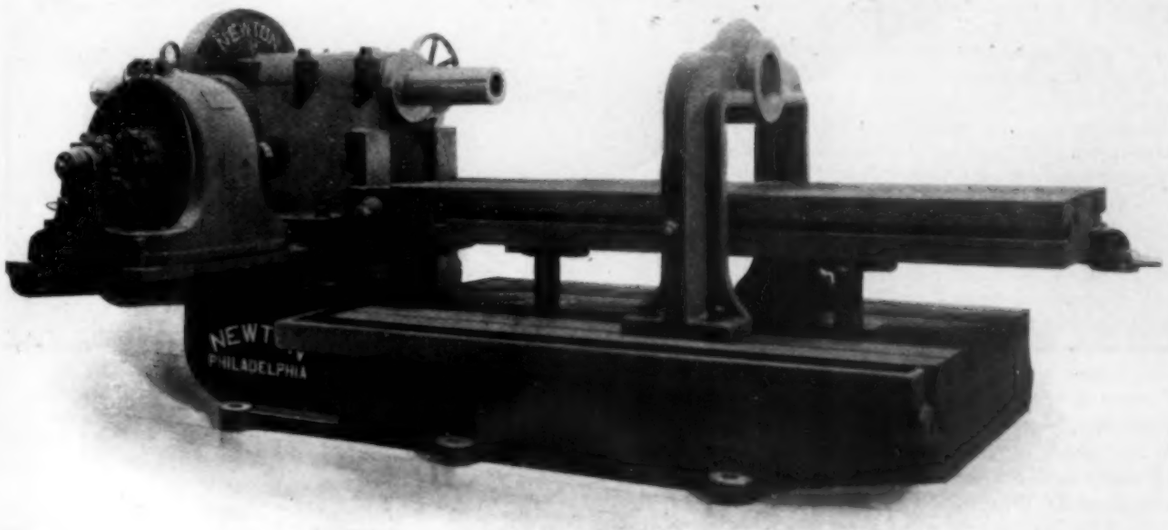
A CHORD BORING MACHINE.

A chord boring machine built by the Newton Machine Tool Works, of Philadelphia, is here illustrated and is one of four furnished by this company, the purchaser supplying the long bed on which the four machines were placed.

These machines are all adjustable on the long bed by rack and pinion, the latter being on the opposite side of the bed, and as they are only removed occasionally, are belted from the feed cone down to a pulley and a worm which supplies power to the pinion, which meshes to the rack and long bed, allowing them to bore centers of different lengths.

The boring bar of this machine is 6 inches in diameter and has an automatic feed of 30 inches. The bar is driven by a steep lead phosphor bronze worm wheel and a hardened steel worm. The motor is arranged to drive through an intermediate gear and a quadrant. The latter is adjustable in order that the speed of the machine can be charged by manipulating the gearing. The boring bar has four changes of feed with slow hand feed and quick return, with a distance from center of bar to base of 31½ inches.

The working part of the bed is 7 feet long by 4 feet wide. The end of bed, as will be seen, is planed off and tongued so that an extension can be bolted in place should it be necessary at any time to increase the length for larger chords.



A CHORD BORING MACHINE.

All the machines are so arranged that the auxiliary or movable work table can be attached when desired. The work table has a pan surrounding it to take care of the lubricant when boring. It is believed that this machine is the heaviest ever designed or built for chord boring.

Edward Atkinson, of Boston, the expert statistician, has made an elaborate forecast of the iron and steel production of the United States. He declares the present depression is only temporary and says the United States must immediately set about preparing to double its present output by 1910. He adds: "In my last prophecy, on the basis of 40,000,000 tons as the world's product of pig iron in 1900, I anticipated 60,000,000 by 1910, or at the furtherest by 1915. That was based on a maximum consumption in this country of 400 pounds a head. It is already over 500 pounds. By 1910 60,000,000 tons will be absolutely needed. Europe has reached its maximum."

The Thornton Light & Power Co., Hickory, N. C., while drilling a well has found iron ore at a depth of 20 feet. It is stated that the deposit seems to be a solid bed.

Albert H. Howard, Worcester, Mass., has been appointed receiver of the N. A. Lombard Co., Worcester, Mass. The bill was filed by the Howard Brothers Mfg. Co.

NEW RUSSIAN TARIFF.

The principal changes in the proposed Russian tariff of interest to the manufacturers of the United States, as given by U. S. Consul Slocum, of Warsaw, are as follows, the unit for assessment being the pood (36.112 pounds):

There will be an increase varying from 25 to 100 percent additional in iron and steel manufactures to the tariff in force at present. Machines and apparatus, complete or incomplete, fitted together or in parts, of cast iron, wrought iron, or steel, with or without parts composed of other materials, even in combination with copper to an extent not exceeding 25 percent of the total weight of the machine, imported by the western land frontier are assessed 3.06 rubles ($1.58) in the new tariff, against 2.10 rubles ($1.18) in the present tariff.

Gas and naphtha motors, steam engines, portable engines except those connected with complex thrashing machines and steam plows, locomotives, locomotive wagons, steam-driven tricycles and electrical locomotives, pumps and hand fire engines, compressors, and icemaking and refrigerating machines are assessed 4.38 rubles ($2.26) in the new tariff. On typewriting and sewing machines the new duty will be 5.58 rubles ($2.87). On all machines made of copper or its alloys, or in the composition of which copper or any alloy of copper is present in a proportion exceeding 25 percent of the total weight of the machine, the duty is raised from 6.48 rubles ($3.34) to 10.80 rubles ($5.56), an increase of $2.22. Dynamo-electrical machines and electric motors of all kinds and electrical transformers are raised from 2.10 rubles to 10.20 rubles ($1.08 to $5.25), an increase of $4.17. Agricultural machines and implements, without steam motors, not separately designated, and also models thereof, are increased from 75 kopecks to 1.26 rubles (39 cents to 65 cents). Portable engines connected with thrashing machines and plows are increased from 75 kopecks to 90 kopecks (39 cents to 46 cents).

The following machines, etc., will be admitted free: Reaping and sheaf-binding machines; reaping machines with automatic ejectors; steam plows; complicated clover-thrashing machines with two drums; complicated steam thrashers with beater drums, in which the length of the beaters is not less that 4 feet 6 inches, and with spike drums having a length of not less than 40 inches; hay-tossing machines; raking machines, horse-drawn; machines for sorting grass seed; sorting machines with spiral wire cylinders; potato-sorting machines; machines for scattering powdered fertilizers; pulverizers; bellows and injectors for vines and trees; grape-crushing machines; continuous wine-pressing machines; centrifugal cream separators and parts thereof; all kinds of newly invented or perfected agricultural machines and implements ordered by experimenting stations and museums.

THE CONLEY SPACING MACHINE.

The Conley spacing machine is designed for the purpose of rapidly and accurately spacing punched holes in structural material. Fig. 1 illustrates the machine as operated in conjunction with a punch, which cuts the material according to the intervals as set by the spacing mechanism. The girders

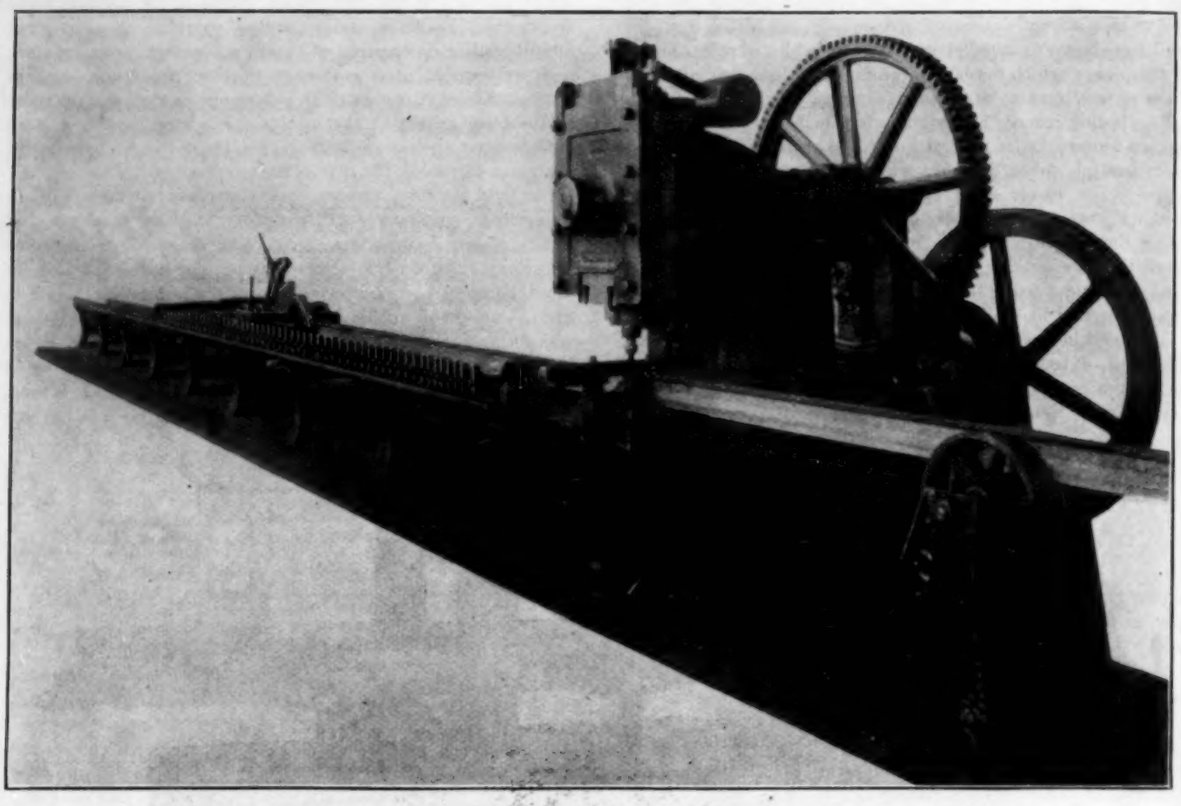


FIG. 1.—THE CONLEY SPACING MACHINE.

of the spacing machine table are ordinarily made in 10-foot sections, supported at every 5 feet, but can of course be made any length desired in accordance with the dimensions of the stock handled. With the exception of the first and last bays of the table, idler wheels are attached that when the carriage passes over them, they are thrown up so that the material which is being punched will roll on them. These wheels can

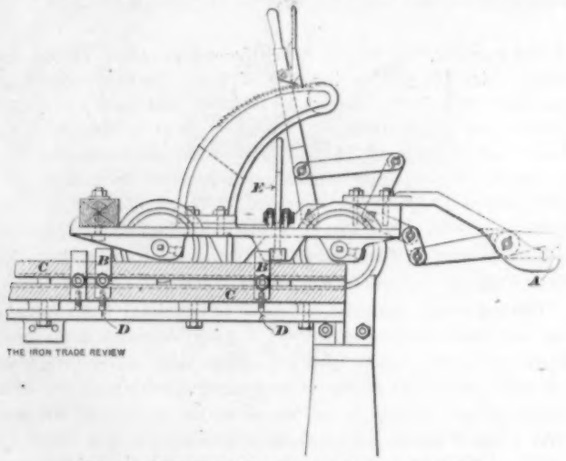


FIG. 2.–SIDE VIEW OF CONLEY SPACING MACHINE.

be adjusted to fit any structural material by moving the collar on the shaft on which they run. The carriage is mounted on six wheels, four on top of the table track and two on the bottom to prevent tipping on account of the weight of the work. The wheels are ball bearing.

Fig. 2 is a side elevation and it will be seen that the material is gripped by the jaws A attached to the carriage and that these are operated by the main lever and held in position firmly by means of the notched quadrant. The carriage is intended to be pushed along the track by one man as required. There are dogs B on the girder of the table and these are adjusted to the distances desired between the holes as punched, there being one dog for each hole. The girder on which the dogs are placed has a T-groove cut in it the entire length to take a ⅝-inch square headed bolt and there are holes cut through to the back and one foot apart so that the operator does not have to insert the bolts at the ends of the slot and so lose time.

The face of the girder has a series of ¼-inch parallel corrugations C cut at an angle of 45 degrees. The dogs have similar corrugations to fit those on the girder and the hole through which the bolt passes to clamp the dog to the girder is slotted to allow for adjustment. The final adjustment of each dog is made by means of a setscrew D. The dog is first set in the corrugations, ¼ inch or less from the exact position strict accuracy demands, and is then raised by the setscrew, which moves it sidewise in rising along the 45-degree corrugations, and the adjustment to the distance required is thus set to close measurements.

The stop lever E is set until the stop strikes a dog on the girder and at that point a hole is punched. After punching, the stop is raised by the lever E, the carriage is moved and on passing the dog the stop is immediately lowered and the material drawn along until the stop again comes in contact with the next dog when the series of operation is repeated.

The machine is manufactured by the John W. Grove Co., Pittsburg.

Geo. Polasky, who for the past five years had conducted a wholesale scrap iron business in Kalamazoo, Mich., with warehouses in several surrounding cities, found his warehouse office was too small for his present requirements, and has opened offices in the Central Bank building, where in connection with his own business, the business of the Model Brass Co., Ltd., and the Mich. Foundry Co., Ltd. (of which two concerns Mr. Polasky is the principal stockholder), will be conducted.

The Monongahela Foundry & Forge Co., Pittsburg, has secured a contract for machine-molded castings which amounts to $140,000 a year and runs for 5 years.

Economy in Buying, Mixing and Melting Iron.*

BY HERBERT E. FIELD, ANSONIA, CONN.

Economy will be the key-note of industry in the months to come, we have passed through a period during which anything which looked like a foundry could make money. Competition was at its minimum and profits were consequently large. For a time, at least, this condition has changed and foundries are looking for work where formerly the work was looking for the foundry. With the new condition of things we have more time to consider methods of cheapening production in order to be able to compete for work and to help out profits. One of the chief items of expense and in most foundries the largest item, is iron.

I cannot hope in one evening to describe what I consider the most economical methods of buying, mixing and melting iron. It would be a subject for a book rather than a paper. I have therefore taken at random a point here and there and have omitted the details whenever possible.

Economy In Buying.

We will consider two subjects under this heading. The method of buying, and what to buy. It is unnecessary for me to point out to this association the advantages of buying by analysis. The disadvantages of the old time method of grading and buying by fracture are so numerous and so well known that they will receive but a word in passing. The chief disadvantages of buying by fracture are the impossibility of defining a grade, the No. 1 of one furnace often being the same as the No. 2 of another; irons of apparently the same appearance as far as fracture goes frequently give entirely different results when used in castings; the buyer by fracture is frequently at the mercy of the makers of certain brands of pig iron. He has always used these brands and these makers know just what he wants. This founder is unable to take advantage of the lower prices often quoted on other brands. Such periods of shortage of pig iron as that through which we have recently passed cause no end of trouble for such founders. Unable to obtain the brand which he has ordinarily used, and forced to buy anything he can in the shape of pig iron, his iron, as one founder expressed it, has run riot. Even those who buy on specified analysis have found that this is an insufficient safeguard at such times. This has led some foundrymen to agitate an advanced step in buying by analysis.

At the last meeting of the American Foundrymen's Association in Milwaukee, it was my privilege to present a paper on "Buying Pig Iron on Specification." In this paper I called attention to the fact that at times when the demand exceeded the supply, it was impossible for the buyer to obtain the grades or analyses of iron for which he had contracted, especially if the iron was bought at a low price. I called attention to the fact that in the rush for tonnage many furnaces were forced beyond their capacity for making high grade pig iron and that the foundries were obliged to take this inferior product or go into the market and buy at a greatly increased price while the furnaces on account of the higher market price were enabled to sell their lower grades for a higher price than they would have obtained under their contract for the higher grade. The founder was often forced to accept the lower grade and inferior castings resulted. As a preventive of such practice I suggested a classification which should form a part of the contract and guarantee a reduction in price to the founder in proportion to the amount the pig iron fell below the guarantee. This should have two beneficial effects. First, it should tend to make the furnace live up to the contract, rather than suffer the reduction; second it would enable the founder to accept the iron even if it did not come up to specifications and with the rebate allowed for this difference, buy special irons to make up the difficiency in quality. If he was forced to use a mixture carrying less scrap on account of inferiority of the pig iron, the reduction in the price allowed would in part at least recompense him for the increase in the cost of the mixture.

Specifications and Rebates.

At the meeting of the American Society of Testing Materials, the pig iron committee which is composed largely of pig iron interests, presented a report which classified the different grades according to their silicon and sulphur percentages. At the suggestion of cast iron interests, this report was later modified to include a rebate clause for iron not coming up to specifications. The amount of the rebate recommended was not sufficient to be at all effective, but it is of value as showing the tendency in the right direction. In order to make this clause effective and fair to producer and consumer alike the rebate should be just sufficient to bring the price of the iron down to the price of that grade at the time the iron was bought. For example an iron running from 2.50 to 3 percent in silicon is bought at say $16.50 per ton. The price of an iron from 2 to 2.50 at that time would be, say $16.00. When the iron was received it was found to analyze 2 percent in silicon. The price paid by the founder according to his contract should be $16.00 as that is just what he would have had to pay for that grade when he bought the iron. A further clause necessary to make this effective would make the acceptance or rejection of the iron optional with the buyer. When the supply of pig iron exceeds the demand, competition will do all that specification will. It is in times when the demand exceeds the supply and when anything in the shape of pig iron commands a high price that we need some guarantee that we will obtain the iron which we bought or its equivalent. Anything which will tend to lessen the troubles endured during the last scramble after pig iron should be welcomed by all foundrymen. This subject warrants the careful attention of all pig iron users.

I wish further to call attention to the fact that considerable judgment should be used in specifying for iron. The specifications should be as liberal as possible and yet fulfill the requirements of the buyer. In many instances strict specifications require such extreme care on the part of the furnace that they in turn demand a higher price. Some furnacemen will guarantee the complete analysis, some silicon and sulphur only. Brands of iron made in the same district and from the same ores have certain characteristics with which the founder may readily become familiar. By this I mean that the irons run approximately the same in total carbon, manganese and phosphorus. Silicon and sulphur are a matter of furnace conditions; phosphorus and manganese are characteristic of pig iron because they are largely due to the ores used. Total carbon while it is influenced by furnace conditions is generally constant for a certain grade of a given brand. A well known brand of pig iron never exceeds .5 in phosphorus, runs between .4 and .6 in manganese and always exceeds 3.65 in total carbon. This furnace if asked to guarantee these amounts would want a prohibitory price for the iron. They will, however, guarantee the silicon and sulphur within fairly close limits. Another equally well known iron runs identically the same in phosphorus and manganese but never exceeds 3.30 in total carbon. They absolutely refuse however to guarantee this total carbon. Other irons are equally characteristic in phosphorus and manganese and carbon so that the founder after becoming familiar with the composition of the different brands can generally obtain the composition that he desires when the silicon and sulphur only are guaranteed.

Pig irons in certain districts have such characteristics due to the kind of ore most economical in their locality. All Lake irons run low in phosphorus and high in carbon. A majority of the Pennsylvania and Ohio irons run the same. Virginia irons are high in manganese with widely varying phosphorus. Alabama irons are higher in phosphorus and low in manganese although there are some marked exceptions in this district.

To buy economically then, we should buy by analysis with specified rebates if the iron is not up to the guarantee. We should buy intelligently, asking no impossibilities of the furnace. We should make use of a knowledge of the general characteristics of the brands, in choosing those best suited for our work.

Four Important Factors.

In considering what to by, there are four factors which determine the most economical brands to buy. First, local conditions; second, suitability as to composition; third, uniformity; and, fourth, economy in handling and melting.

The available supply and price of scrap is a local condition which determines what kinds of iron are the most economical.

*Read at Pittsburg Foundrymen's Association Meeting, Nov. 2.

If the price of scrap is low in comparison to the price of pig iron, iron should be bought which when mixed with that scrap would give the required composition in the casting. If, however, the price of the scrap iron is high, it is frequently more economical to buy pig iron of a composition nearer to that required. A foundry in one district may carry 75 percent scrap in its mixture while another in a different part of the country melting with 50 percent scrap may be using as great economy when the prices of scrap and pig iron in the two districts are considered. I know of a locality where a No. 1 machinery scrap frequently equals or exceeds the price of a No. 2 pig iron. The founders have come to believe that scrap is an absolute necessity to their mixtures, and the demand is so great that the high prices result. Higher silicon and low sulphur iron must be bought if much scrap is to be used. If comparatively small amounts of scrap are used a lower silicon and high sulphur iron may be bought at a saving in price of the pig iron. An hour's time spent in such calculation before purchasing iron may frequently result in a saving of from 50c to $2.00 per ton in the mixture.

A short time ago an instance was brought to my attention of a foundry located in the vicinity of a blast furnace. I was acquainted with the class of work done in the foundry, and with the pig iron produced in the furnace. The latter was ideal iron for the founder and I commented upon how conveniently the founder was situated to his iron supply. I was told that he bought only a small portion of his iron from that furnace; he said his foreman insisted upon having a mixture of six or seven different brands, consequently he was paying $1.00 and upward more per ton for his pig iron bought at a distance while at his door was a better iron at a much less price. There is a deep seated tradition that in order to make good castings a large number of different kinds of iron should be mixed. This arose under the old system; if one brand was bad, the others would tend to lessen the defect. When iron is mixed by analysis, there is no need of this and the most economical mixture as regards price should be used which will give the required composition whether it be one brand or five.

Suitability as to Composition.

The second factor in deciding what iron to buy, is its suitability as to composition. The cost being the same, it is advisable to secure irons that are as near as possible to the composition required. This avoids the care necessary in mixing grades of iron of varying composition. The practice of buying odd lots of iron wholly unsuited for the work simply because it is cheap is economical only in so far as such irons can be mixed with irons having the properties which this iron lacks and the mixture of the two be less in price than a single brand suited for the work. This does not by any means signify that a buyer should not always hold himself in readiness to buy at a bargain such lots as are occasionally offered. If such iron is offered, the founder should immediately determine what sort of an iron would be necessary to mix with that iron to bring it to the required composition. Its price should be obtained and if a mixture of the two can be made economically the lot should be bought.

Several factors must be considered in determining what irons are best suited for a certain grade of work. Generally speaking the softest iron which will give the required strength is the most economical. There are instances, however, where the weight is large in proportion to the cost of machining, that a few hours' extra machine work can be paid for many times by using a cheaper iron. Foundry and cupola conditions vary so much in different foundries that the composition best suited for one foundry will not do at all for the other.

It is advisable then to select irons which will produce a mixture of such composition as will most economically combine economy in price of mixture with economy in machining under the conditions in vogue.

The third property to be considered in determining what to buy is uniformity. There is a considerable variation in a single car of some grades of pig iron; this is due to the fact that there is a variation in a single cast from the blast furnace and also to the methods of grading at the furnaces. This variation has been largely overcome by the use of the casting machine. The iron is tapped from the furnace into ladles and there becomes well mixed before being poured into the iron molds of the machine. Each cast thus represents a car of uniform iron. The advent of machine cast iron into foundry practice has been an event of no small moment. Its value will be more and more appreciated as it becomes more generally used.

The shape and condition of the pigs as they come to the founder is an important factor in the extra cost of handling and melting the iron; while the large unwieldy pigs formerly shipped to the founder are now seldom seen, many furnaces still send out iron, the cost of handling and melting of which is no small item. The heavy weight and rough shape make them difficult to handle while the excess of sand which they carry is a dead loss to the founder. If it is charged into the cupola, heat must be furnished to melt it. The allowance generally made for sand is not sufficient to overcome the amount usually found on the outside of the pigs. Here again we see the advantages of machine cast pig iron; you pay for iron, not sand; you do not have to charge a large amount of sand into your cupola which must be melted and kept fluid. Dr. Richard Moldenke has presented a paper before this Association proving that the higher combined carbon irons have a lower melting point. This would indicate that there was a saving of fuel in melting the machine cast iron over the sand cast, owing to this higher combined carbon. It is difficult to determine just what difference in price this variation in the condition of the iron makes; it is safe, however, even with our present knowledge, to choose at an equivalent price the sandless pig over the sand cast, of the same composition.

In instituting economies in buying irons we should endeavor to make these economies permanent. A few cents saved per ton in the cost of a mixture becomes a large factor providing it is made continuous. A combination of a number of small savings will unite to make a large economy. If iron is not bought economically all the methods known to practice or science cannot make the mixture economical.

Economy in Mixing.

Mixing economically and mixing by analysis are synonymous providing the latter is carried on intelligently and under favorable conditions. There is no division of foundry practice where greater economy can be maintained than in the mixing of the iron. I may also state that there is no division where a saving shows less than right here. At the end of a week, a month, or a year, you can foot up the cost of your molding, your core making, your cleaning, or your general expense and compare them with previous records. It is different with your iron; the great fluctuation in the price prevents such comparisons. If the cost of the iron per pound for the year is low, it is generally laid to the low price of iron. I believe that a saving of $1.00 per ton in the cost of a mixture would not be appreciated in one foundry in a hundred unless the attention was called to it at the time the saving was made. There are many foundries today melting from five to fifty thousand tons of iron in a year in which a saving of from 50c to $2.00 per ton could be made by an intelligent application of chemistry to the mixture of their iron.

A saving in the cost of the mixture is but one of the many economies accomplished by the use of analysis in melting. We assume at the outset that the mixing is in the hands of one who is competent to use analysis intelligently. Foundry chemistry has not as yet reached perfection so far as its general application is concerned. This has been largely due to the fact that the opportunities for perfecting one's self in this branch of foundry practice have been limited. There are certain principles which may be learned from experience in one line of work. This knowledge when applied to some different class fails to work. The failure is ascribed to some unknown condition unaccounted for by chemistry when in reality the fault lay in lack of experience in the one who sought to apply the knowledge. You would not expect a molder whose whole experience had been on bench work to make much of a success of his first loam job. He might think that he knew all about molding, but when he sought to apply that knowledge in his new capacity something would be found wanting. You would call it experience. You should no more expect to take a chemist from a steel laboratory and set him at mixing cast iron. Neither should you take one whose experience has been wholly with stove plate and set him at mixing for rolls. Such a one

would no doubt produce something in the way of iron, but neither the most economical, nor the best. It is somewhat to be regretted that this condition of affairs exists. It is not to be wondered at, however, as the number of chemists who have devoted their time exclusively to foundry work is comparatively small, and the number who have had the opportunity to become familiar with all the different grades of cast iron is still smaller. There is a peculiar fact in connection with this knowledge of foundry chemistry. However small a knowledge of the subject a person has, he thinks that that knowledge is all there is to know. We have only to look back at statements made in papers before this and other foundrymen's associations to prove this. Men who today stand high in metallurgical work, made statements which they must now wish had remained unsaid.

Technical Education.

This problem of foundry economy is not easily solved. Several of our technical institutions have foundries and are supposed to give instruction in the metallurgy of iron. These courses have not been a success as far as practical results go. The number of students nominating such courses has not warranted the expense necessary for proper instruction. Such instruction as has been attempted has been so limited as to be of little practical value. It will be the privilege of the Pittsburg foundrymen to so advise those in control of the new institute to be established in your city that this state of affairs may be overcome. The foundrymen of the country are looking to this institute for a course which will fill a long felt want along this line. They hope to see the theoretical and practical combined in such instruction as will fit the graduates for positions in their foundries which now remain unfilled. I should like to see the word theoretical stricken from the foundry vocabulary. It is a disease which clings to the graduate of a technical institution as seen through the eyes of many so-called practical men. In spite of doses compounded upon prescriptions of a most practical nature, the theoretical misnomer always clings to him. He may serve his time with the apprentice, he may acquire by hard manual labor the practical experience of the molder, and yet because his foundation was a technical education in which somewhere a few theories might have been taught he is called theoretical while the mechanic with no more practical experience and with no education to start on, is called practical.

An education cannot make a wizard out of a fool; an education such as is possible to acquire from an institution founded on practical lines should form a valuable foundation on which to build. I may be wandering a little from my subject, but I desire to point out that there is no economy in the struggle which is going on in so many foundries between the so-called practical and theoretical practices. An institution of learning which can turn out men who are able to discriminate between the extremes would form a factor in foundry economics, the value of which can hardly be estimated.

Economy can, in the light of our present knowledge, demand of the expert metallurgist that he produce at the least cost, the best possible product for the work intended. The cost of machining should be taken into consideration as well as the cost of the mixture. He should be able to eliminate a majority of the ills so common to cast iron, and when they do appear he should be able to distinguish the cause of the defect, and to eliminate it; he should know whether a pattern is properly constructed for an economical production of the casting as far as the iron is concerned; he should be familiar with all the different compositions necessary for the innumerable number of special castings, each of which requires properties peculiar to itself.

There are a great many different grades of cast iron and what is perfect for one grade of work is exactly the opposite for another. Iron that makes strong, soft, light castings makes rotten, spongy and weak, heavy castings. The best iron for stove plate may be the worst iron for castings which, although they may be but a little heavier, yet vary more in thickness. No one, however expert, can change the quality of the pig iron which he is to use. He cannot remedy a defect due to high phosphorus if he has not the means for reducing it. If high silicon is needed to improve your product, he cannot create it out of the atmosphere. In other words, he must be supplied with the necessary materials to accomplish what he is set to do. These are frequently less expensive than the ones he is given to work with.

Economy in Melting.

The location and arrangement of the foundry and the amount of iron melted determine what is the most economical method of handling iron. A travelling crane covering the pig iron yard is advantageous when the yard and cupolas are properly arranged and when the amount of iron handled is sufficient to warrant the expense. The use of crane scales allows the charge to be made up in the yard; the traveler moving from pile to pile until the whole charge is complete. When the iron is properly arranged in the yard this is a rapid and satisfactory method. If each load is made to represent a charge, the confusion of mixing and weighing on the cupola platform is avoided. If the building is so arranged that the traveler can place its charge upon the cupola platform, there is no need of an expensive elevator.

Foundries built with their pig iron yard on a level with their cupola platform, will not benefit as much by the traveling crane; neither will those who unload their pig iron and coke directly into storehouses forming a part of the platform. In such cases the weighing car is more economical; each load of the car should constitute one charge. When the charge is made up it is taken to a convenient spot where a hoist lifts the charge from the scale car, placing it upon another car, and the weighing car returns to make up the next charge. Both of these devices prevent a rehandling of the iron in weighing and avoid expensive charging platforms. When the crane is used, no tracks are needed, and the iron is piled solid in the yard. When the cars are used, more room is needed for piling, tracks must be laid and an elevator built.

I visited a foundry a short time ago, where all the iron for two cupolas was wheeled up in hand barrows, piled on the platform, carried from platform to scale, and for one cupola was thrown from the scale into the cupola, and for the other, it was again placed on the barrow, wheeled to the cupola, and thrown in by hand, making four handlings in one case and six in the other of every piece of pig iron charged. This is not quite as bad as carrying it up on your back, but it is next to it. This method appears antiquated when compared with the crane and weighing car methods, especially if automatic dumping devices are used. It is not economical, however, for small foundries melting light heats to expend large sums for such mechanical devices. If one man does all the cupola work from chipping out to charging and tapping out, it would hardly be economy to spend a large sum on improvements in order to give him time to smoke his pipe for one-half of the day. I do assert, however, that many of our methods of handling and charging are antiquated, expensive, and inaccurate. This department has been neglected in many foundries who are wholly up to date in other matters. It is comparatively easy to predict how much such improved methods will save in labor and only such devices will prove economical as will save sufficient in labor to offset the expense.

Two foundries, one with every modern equipment for charging, melting and casting, the other with its old style cupola, poor methods of handling and pouring, will not secure the same results at an equal outlay for iron. The modern plant with its conveyances by which the melted iron may be placed at the side of the mold, ready for casting in a few seconds, is one problem; the old arrangement whereby it takes half an hour to get from the spout to the casting, is another. In the second case the iron must be enough hotter, and contain elements which will give it additional fluidity, to last the difference in time. This means that more fuel must be used in the second case than the first, and consequently a greater absorption of sulphur by the iron. This absorption must be counteracted either by using a lower percentage of scrap and thus reducing the sulphur, or by using higher silicon iron to offset the action of the sulphur. Both mean an addition in cost of the mixture. In order to obtain the same fluidity, a higher phosphorus iron would have to be used in the second instance. High phosphorus means weakness and in many cases segregation and spongy spots. If your brother foundryman is melting more economically as to cost of fuel and cost of iron and producing better and stronger castings do not blame anyone until you have investigated the conditions under which the two foundries are work-

ing; for rapid method of handling iron from the cupola, means not only a saving in itself in labor, but it means a saving in the cost of the original mixture and in the melting of the same. Melting iron very hot and then allowing it to stand for a long time before it is cool enough to pour is not only a waste of fuel, but it means a better grade of iron to make up for the sulphur absorbed in the extra amount of fuel used.

Comparative Costs of Mixtures.

There are two methods of comparing the costs of the mixtures. One, based upon the daily charging sheet, where all scrap, shop as well as foreign, is rated at the same price and the other is to figure from the amount of material bought. In the latter case the home scrap is rated at exact cost. Figuring on the former basis one foundry may be apparently doing better than another, yet in reality the cost of the mixture may be higher. This difference would be due to the amount of scrap runners and pig beds returned from the day's melt. This in many shops is figured as scrap, and figured at the price of bought scrap, when in reality it may be a great deal better and much more of it can be used in proportion to the amount of pig. This accounts for the great variation in opinion as to how much scrap a brand of iron will carry. A founder may find that his neighbor is carrying more scrap than he is and in investigating the reason find that his own mixture based on a fair valuation of the home scrap is more economical with its lower scrap percentage than is his neighbor's with its larger proportion of scrap. Two founders running on the same grade of work will vary in the amount of iron remelted as runners, pig beds, etc. This is due to the fact that in some foundries great care is taken in figuring the weight of the castings and the amount of iron to be taken for that casting. Others take three or four tons extra to pour a 10-ton casting and have pig beds all over their shop which must be remelted as scrap. There is a leak at this point in many foundries and if your iron costs are unaccountably large, this is a good place to look for a reason.

The cupola itself is a factor in melting economy often neglected. An old cupola is not necessarily a poor cupola. There are some ideas which have been introduced into modern cupola practice which can be advantageously applied to our old cupolas. The methods in vogue in a certain foundry determine to a large extent the best practice for that foundry. There are some foundries where the molding stops when the wind goes on. In such cases, small slow melting cupolas with poor devices for handling the melted iron are a burden which should be replaced by large, rapid melting cupolas, with modern appliances. Even in those foundries where the molding continues after casting begins, the interruptions and confusion inseparable from casting prevents as much work being done. The large rapid melting cupolas allow the commencement of casting to be delayed so that one or two hours' molding per day for each molder may often be gained. This is a saving worth considering and it has been actually accomplished by many foundries who have increased their cupola capacity per hour either by the installment of larger cupolas, or by putting in additional cupolas together with the necessary appliances for handling the iron. The increased cost due to the slight extra expense in melting is many times repaid by the extra amount of work obtained per day.

There has been so much written about melting ratios, and the construction of cupolas, that this subject will be passed with a remark, that where conditions are favorable, low tuyere cupolas are the most economical. Cupola practice varies so much that information in regard to size of tuyeres, amount and pressure of blast, etc., is reliable only when applied to a particular instance. What works well under the management of one foundry, does not under another. General rules may be found in the abundant foundry literature on this subject. The melting ratio has been so thoroughly threshed out that to add to it would be but to add to confusion. In looking into the subject for my own use I have found that the low ratio melters use duller iron. This does not always mean poor castings, as many of them have quick appliances for handling which enable them to cast while another founder is thinking of it. Many use higher phosphorus iron which enables them to get sounder castings with dull iron and light work. This has led me to believe that there is more truth in some of the fanciful figures advanced than I once believed possible. Foundry conditions determine largely the most economical fuel ratio. There is no saving in heating iron so hot that the molders have to wait before pouring; neither is there any economy in scrapping castings on account of dull iron. Between the two is a point to be determined by each founder for himself, under his particular and peculiar conditions.

There is one more economy in melting which modern practice has accomplished, viz., the substitution of the cupola for the air furnace in the manufacture of so-called high strength iron. It was formerly thought that it was necessary to melt iron for such work in an air furnace. With the advent of chemistry into foundry practice came the knowledge that the strength of an iron was dependent upon its chemical composition and that it was possible to duplicate air furnace iron in composition and strength from the cupola. It is much cheaper to melt iron in a cupola and I have found it much more satisfactory. The cupola is much less affected by weather conditions and as a general thing cheaper irons can be used in a cupola than it is possible to use in an air furnace and obtain the same results. The air furnace is still a valuable adjunct, especially in old foundries. The peculiar conditions surrounding that branch of founding make its use there profitable. I am aware that many will take exceptions to my references to the air furnace. I have used both the air furnace and the cupola for Government work on gun carriages and the like, and have found that it is much easier and cheaper to meet the Government requirements as to strength, etc., with cupola iron than it is with iron melted in an air furnace. A complete and thorough knowledge of the metallurgy of iron, of cupola changes, and of the composition which will give the required strength in different thicknesses of castings is essential to make this possible.

Will be Given a Chance.

Judge Landis, before whom an application was made at Lancaster, Pa., for a receiver for the Susquehanna Iron & Steel Co., rendered an opinion Nov. 7 in which he refuses to either appoint a receiver or dismiss the petition, but gives the company until Jan. 1 next to establish a stable basis. The judge says:

"We have no disposition to interfere with the progress of the company nor to embarrass it in its business ventures. If it can, of itself, weather any storm which is likely to arise, we will not only encourage the efforts of its officers, but will also assist them as far as the court is able. But if it cannot meet its obligations it is certainly the duty of the court to see that no one individual secures an undue advantage over his fellows, and that its assets shall be protected in every possible way for the common good of all. We have, therefore, concluded that we will not, at this time, appoint a receiver, nor will we dismiss the bill. It is our purpose to give the officers and directors of the company an opportunity to work out their own salvation. If between this date and Jan. 1, 1904, they can satisfactorily show that the finances of the company can be and have been placed in such shape as to secure the continuance of the business and a reasonable likelihood of its future success, we will dismiss the bill. If, on the contrary, they are not able to do this, we will appoint some disinterested person as receiver. At this time, therefore, no final decree will be entered."

A creditors' petition in bankruptcy has been filed against P. B. Clarke, of 29 Broadway, New York. Mr. Clarke is president of the Clarke Automatic Scales Co., and is connected with other concerns. His liabilities are placed at $190,000.

The Penn Steel Castings Co., Chester, Pa., has elected the following officers: President, M. H. Bickley; secretary and treasurer, George M. Booth. The directors are: M. H. Bickley, J. W. Hawley, J. Max Bernard, George K. Crozer and George M. Booth.

The Corbin Screw Corporation, New Britain, Conn., contemplated making extensive additions to its plant at Dayton several months ago, but has decided to wait a while before proceeding with its plans.

National Founder's Association.

[Continued from page 42.]

stimulus to the building up of labor organizations, and with the growth of the organization idea has come increased dissatisfaction among union workmen.

"The effect of this great wave of organization has been felt practically everywhere, but when we realize its extent and the power that has suddenly been placed in the hands of men little used to exerting authority or controlling forces, whose influence, if concentrated and united, would mean so much for good or evil, the marvel is not at the amount of agitation we have witnessed or the injury to business that has resulted, but that it has not been much worse. The tendency to overcapitalize, unduly expand and encourage ourselves to believe that our enterprises will sustain burdens that we had hitherto believed impossible is a common error in times like these, and it is a question whether the labor leaders who have been using the power in their hands to enforce outrageous propositions have not been in the fashion to a certain extent rather than otherwise. Without in any way justifying or excusing all the intolerant, unbearable and un-American tendencies of the trade union when it grows strong or radical, we must not forget that for many things trades unions do a prototype can be found right among manufacturers and oftentimes among manufacturers' associations.

"The National Founders' Association, however, has never assumed an extreme position in these matters. It has rather aimed to occupy a middle ground, and while not always endorsing or justifying the course pursued by its members on the one hand, it has set the seal of its absolute and emphatic disapproval upon all of those unfair restrictions and limitations that would appear to be so often the very foundation and backbone of our modern trades union. All of these belong to an age gone by and their adoption by present day organizations is entirely out of place when an association organized on the broad lines adopted by this one, recognizes and has established certain relations with the trades union to which the bulk of our molders and coremakers belong.

"We do not question the right of an individual to affiliate with an organization; we do not refuse to meet its representatives, but we attempt through the medium the organization furnishes to adjust in a broad and comprehensive way the many difficulties constantly arising between our members and their foundry employes everywhere. We have, though, consistently objected to and do most emphatically protest against their efforts to inject into the operations of the foundry obstructive measures that tend immeasurably to the injury of all and narrow the ambition and individuality of the employe. Your commissioner believes that he voices the sentiment of every member of our organization when he says that, after listening patiently to all the persuasive arguments put forth by representatives of the trades unions, and after to a certain extent making the experiment, we are of one mind in emphatically declaring that every effort to arbitrarily restrain the employer from conducting his business in a lawful way must cease, and can never be quietly submitted to by this association.

"Any measure, method, enterprise or business that depends for its success upon unlawful means, upon the doctrine of force or the arbitrary restraint of the liberty guaranteed to every citizen of this commonwealth, whether employer or employe, must surely fail. In some ways in our willingness to please and temporize, we have permitted the introduction of conditions that must be removed if we are to reach an equitable understanding; yet it would seem to be the thought of the radical labor element that these conditions should not only become permanent, but the imposition of others allowed before the trades unionist will feel that he is receiving proper recognition.

"With the employe, the compensation that he will receive for his labor is the primary and all-absorbing factor. To facilitate his securing the utmost possible in this direction he has in a short-sighted way surrounded the wage proposition with arbitrary enactments in which the employer is not permitted to have a voice, and we are placidly informed that inasmuch as these are a part of the union's written or unwritten law, they are not matters that can be profitably discussed, since a change can only come from a change of policy enacted at a national convention and we all know what that means.

"Some few questions, upon which the union itself is perhaps not entirely agreed, they are willing at times to consider and discuss, but upon others the employer does not appear to be regarded as having many rights. It may be true, perhaps, that this spirit of intolerance is somewhat a matter of recent growth, with which the business conditions of the past few years have had much to do. But it must be remembered that all this has not come about suddenly or without warning; it has been a gradual process of evolution, of which every employer who has had his eyes open must have been cognizant.

"And here lies the secret of all the troubles of employers in the foundry business, as well as the difficulties which have cost the employers of labor in this country millions during the past few years and may continue to cost them millions more. They are largely a result of willful indifference and blind egotism on their own part. The employer who imagines that in some supernatural way he is going to escape while his fellow employer is involved, who feels there is no necessity for action on his part until the storm bursts, is possessed of no more and perhaps less sense than the man who scoffs at all forms of insurance and tries to take it out when on his deathbed or when his buildings are on fire. In the case of any form of labor disturbance, be it great or small, every employer is affected in the most direct and positive manner by the status of his fellow employers. His employes are in like manner unavoidably controlled by surrounding conditions and he and his in their time influence the situation in like manner.

"No employer is independent, none stand alone, and as a matter of fact the measure of liability increases rather than decreases as the number of employes increase. The larger the interests represented, the greater the danger; and there is not a manufacturing concern in America today, especially those connected with or related to the iron and steel and machinery industries, that is not a large sufferer from causes that could have been controlled had the employers of America been less indifferent to them and to their employes', their stockholders' and their country's welfare. There is no need to enlarge upon this point. Labor, while not responsible for all or nearly all of the misery of the present industrial disturbance, must yet bear its share of the burden and had the employing interests of this country generally been forehanded enough to see the storm approaching and come together in a businesslike way and adopted a firm yet conservative policy, there would have been fewer strikes, more buildings completed, more raw and finished material consumed, more machinery built, more money kept in circulation and fewer idle men in America today.

"A universal appreciation by employers generally of the exact situation as we see it all about us might perhaps have led to co-operation on the part of the employing interests of the North American continent in such a way as to bring to bear at all times upon the officers of the law sufficient influence to compel them to do their duty. In other words, the strike and the striker alike depend more for success upon unlawful procedures and lawlessness than upon any primary justice in their cause. It is true, of course, that employers are often wrong, are not deserving of sympathy or support, are not willing to give proper and kindly consideration to the desire of their employes or display a proper appreciation of certain rights possessed by all who may be dependent upon them. Yet we do not read day by day of the employer in person or by hired agents, little better than murderers and assassins, lying in wait to assault, shoot or murder his competitors with whom he has a disagreement, the man who is taking his business or his trade, or the employer who for reasons of his own, be they just or unjust, refuses longer to submit to conditions that his employes would impose.

"The employe has a perfect right to organize and join as many organizations as he sees fit. It is not a 'privilege;' it is nothing the employer can pompously declare his willingness to concede. The employer has nothing to do with it; it is none of his business. This same employe has the same right, either in person or by an attorney, to bring to the attention of his employer or employes any grievance that may in his opinion exist

or need adjusting; and it has always been the thought guiding the policy of our administrative council to urge that the employe or the representative of the employe be received in a most cordial way and when he was in the right, his desires so far as possible be granted, and when he was in the wrong he should be told so frankly and reasons given so far as possible to prove wherein he was in error.

"If the employe is not satisfied he has the unquestioned privilege of leaving his employment; a number can leave; they can all leave and depart to their homes or secure other employment elsewhere. But right there their every real and lawful right under the circumstances should terminate and they have absolutely not a particle of right to the establishment of the picket, the slugger and 'educational committees' of which we hear so much. They have no right whatever either within ten feet or ten miles of their former employer's plant to make the slightest effort, directly or indirectly, to interfere with or retard the business by any move affecting his plant or by placing any embargo or boycott upon its product, whether the means adopted are peaceful or enforced after dark by a club or at the point of a six-shooter.

"Lack of organization on the part of employers and those who sympathize with them on the one hand and indifference to the supremacy of the law, the Constitution of the United States and the flag on the other, are responsible for a state of affairs, that occasionally borders on anarchy. The striker's chief hope of success rests nearly always on the fear he expects to inspire by lawless acts; and America's only hope must be in the arousing of a dormant public sentiment and the realization upon the part of the officers of the law that there are other influences to consider aside from those wielded by the striker and the 'grafty' business agent.

"We are all of us too much accustomed to feel that these are necessary evils; that they must be, and that like other vicious tendencies of mankind they cannot be prevented. But they are controlled elsewhere; and in the future the great public sentiment of America is going to rise up and declare that these things can no longer be. Enforce the laws and your abolish strikes.

"Compared, however, with some lines and remembering the character of the organization with which we have so largely to deal, the foundrymen of America can felicitate themselves that while the situation with us is far from ideal, it is infinitely better because of the existence of this association. No living man is competent to predict what might have been the effect upon the general foundry business of America during the past few years but for the expenditure of the few thousand dollars by our members, and what was infinitely greater the unselfish consecration to a high conception of their duty by the members of your various administrative councils. Their personal character, their well known business integrity, have been the chief influences that have operated to increase our membership and inspire a wholesome respect for every decision made or policy decided upon; and while we have not been free from trouble, there has been a growing respect for our organization and an increased tendency on the part of employes to show a more resaonable spirit.

"In apparent contradiction to the foregoing are the two chief difficulties which have arisen during the year, viz.: at Toronto, Ontario, and Moline, Illinois.

"There is an old Spanish proverb to the effect that no two parties can quarrel without both being in the wrong, but if an exception could ever possibly arise, it was in each of those instances, when, as recorded elsewhere, our members indicated by every possible means their desire to meet the wishes of their employes, offering them concessions that aggregated more than three-fourths of those originally asked. In both cases these were indignantly rejected, with the result that disastrous strikes have been waged ever since. If ever there were in the world's history two cases where the radical, intolerant disposition of trades unions should meet with reverses it is in those referred to.

"Viewed from the standpoint of efficiency, no complaint can be possibly made of the association's effort when its members have had strikes forced upon them. The only criticisms ever put forward by members of the organization at any time have been to the effect that under our rules we have been inclined to show too much consideration to the requests of our employe; that we have been, if anything, altogether too fair and not as much inclined as we should have been to resist what have been regarded as the unjust tendencies of the times.

"The truly wonderful record of this organization during the past few years, passing through a period that has brought so much disaster to employers in many other lines, is something of which the association, yet only a few years old, can be very proud. It has not been the easiest task in the world for your administrative council at all times to fully satisfy everyone, with so many men of many minds to whom labor organizations and their methods on the one hand were more or less of a strange proposition, and on the other our newly formed organization doing the best possible in the face of many adverse circumstances.

"We have never overestimated our own strength; we have never sought trouble or sought to avoid it; and while our records show that we have been uniformly fair and liberal, they also show that whenever the members of the Iron Molders' Union have gone on strike against the members of the association, they have invariably lost, and whenever they have remained faithfully and honestly at work, no matter what the circumstances, they have invariably made gains.

"At the time of our last convention, the committee having the matter in charge, made a report concerning the progress made with the view of having some uniform arrangement governing the conditions existing in the foundries of the members of our association engaged in the manufacture of what are generally known as machinery castings. As will be learned from the report of the chairman of that committee no satisfactory progress has been made, and while such an arrangement would probably be to the benefit of all, it is a question as to whether this is a judicious time to give the question consideration. In all the conferences that have been held your representatives have insisted upon more equitable conditions than any yet agreed to by the representatives of the other organization; and while some substantial progress has been made in defining the position of each side, and it is understood that upon a number of propositions there was practically no disagreement, yet the representatives of the union have shown a disinclination to bring the negotiations to a conclusion.

"Experience has taught us all, however, that the system of making local agreements is exceedingly unsatisfactory and should be terminated as quickly as possible. There are no two agreements in the country that are similar in their provisions and every effort that has been made to change this condition has met with the opposition of the union representatives. An agreement that may be made in one city satisfactorily is rejected by the representatives of the union in another city, only a few miles away, a week or two later, on the same kind of work, and as a result we have a condition of chaos that apparently, in spite of all professions to the contrary, is very desirable from a union standpoint.

"The past year has shown a large increase in the number of localities adopting a shorter workday; and while it has not come about without more or less friction, no serious disturbances have taken place except where other complications were involved. While the business situation would seem to indicate that it will be necessary to call a halt in the making of changes that will surely increase the cost of manufacture for many months to come, that is no guarantee of industrial peace, as in a number of localities foundrymen have for a long time felt the conditions to be unnecessarily severe. We are already hearing the rumblings of a discontent that can be regarded in no other way than a determination to have more equitable conditions; and there is every possibility, therefore, that the coming months may witness a condition when the employers will be compelled to assume the aggressive in a great many directions.

"During the past year the coremakers' organization has become affiliated with the Iron Molders' Union and the wage discussions that have recently been held have included therefore the coremakers as well as the molders.

"Experience having taught the desirability of the Association having at its command a supply of competent non-union men whose services could be more or less depended upon in event of emergencies arising, an effort has been made to develop a plan that would meet all the requirements in this direction. A contract has been prepared and entered into

with a large number of the most efficient non-union workmen who have assisted the association in times gone by, and judging from our experience during the brief period it has been in existence it would seem to have developed no weak spots thus far and gives every promise of proving of the utmost value to the organization in the future. Already it has proven its merit in those cases where it has been tested, and those foundrymen who have molders in their employ holding contracts with the association will bear testimony to its utility."

An appendix to the commissioner's report gave a detailed statement of the various labor difficulties of the year, the steps taken and the outcome in each case.

Midvale Steel Co.'s Addition.

The Midvale Steel Co., Philadelphia, has finished plans for the new building in which armor plate will be made under the contract recenty obtained from the Government. The plans were submitted to the company's officials Nov. 9, and it is expected that within a few days the contract for construction will be let and the building pushed as rapidly as possible. The building will adjoin the company's present one and will be of structural steel and corrugated iron on foundations of brick and concrete. It will measure 336 x 197 feet and will be 96 feet high to the peak of the roof of the main span, which will be 70 feet wide, and will be flanked by two wings, one of 38 and the other of 64 feet span, each 40 feet high. The main span will contain runways for two huge electric traveling cranes, one having a lifting capacity of 150 and the other of 75 tons, and there will be crossway runs for two 150-ton forging cranes, with a span of 62 feet from center to center. The 64 feet span will contain a runway for a 75-ton crane, with an overhang of 14 feet, and the 38-foot span a runway for a 20-ton crane. Draughtsmen are still at work on the plans for additional open-hearth furnaces which must be built. It is expected that contracts will be let shortly for the immense hydraulic presses which are used in manufacturing armor plate. All told the new plant to be built and installed at Midvale will represent, it is estimated, an expenditure of between $1,500,000 and $2,000,000.

Bids for the superstructure of the Blackwell's Island Bridge, New York, were opened a few days ago and two bids were received. Milligan Bros. made a bid of $5,188,850, and the Pennsylvania Steel Co., $5,132,985. On Oct. 24 bids were opened, and at that time the only bid received was that of the Pennsylvania Steel Co., $5,233,514. Commissioner Lindenthal rejected the bid. Bids were also opened for the comfort stations and ventilators for the Williamsburg Bridge. For this contract the following bids were received: Thos. Dwyer, $188,000; R. H. Hood Co., $193,340; Snare & Triest Co., $176,400.

A centrifugal pump of novel design and unusual capacity will be exhibited at the St. Louis Exposition by Henry R. Worthington, of New York. That this pump marks a distinct departure from the usual centrifugal practice will be appreciated when it is stated that it will be capable of delivering about 500 gallons of water per minute against a head of 250 pounds per square inch, and with high efficiency. This pump is of the type known as the multi-stage, and differs in a great many respects from the centrifugal pumps with which engineers are familiar.

Mr. Irving H. Reynolds will shortly retire from the Allis-Chamers Co., and the duties of chief engineer will be assumed by the engineers in charge of the various departments, these engineers availing themselves of the advice of Mr. Edwin Reynolds, consulting engineer of the company.

The Flickinger Wheel Works, Galion, O., have been closed. The plant has been declared unsafe by the chief inspector of work shops and factories, and the company cannot resume until new buildings are erected. It is not announced whether this will be done.

At the meeting of the J. H. Clark Co. directors, at Portage, Wis., it was decided to lease a building, furnish it with tools and machinery, and commence the manufacture of the Clark fuel saving device.

THE HARDENING OF STEEL.

T. G. F. Dolby, in *Sparks*, comments as follows on an article entitled "Hardening at Boiler Temperature:" It is stated that "owing to the heat of the water being so high it would not absorb the heat from the steel fast enough to harden it." Now this is in one sense correct, but it does not go far enough. The question I would now propound is: Is it the temperature 212 degrees, or is it that the water is kept boiling which hinders the water from coming in contact with the steel?

It certainly is not the 212 degrees, as the following will show: I gave a piece of tool steel ¾ inch thick to a workman to cut a long hole through it. I noticed that the chisel gave out and so I took an inch off the chisel, hardened it by quenching it in melted tin, gave it back to the workman and he soon finished the job with it. Now this was quenched at 465 degrees, so 212 degrees cannot be considered a hindrance to hardening steel, except only when water is the means of quenching. I have not gone above 465 degrees in my experiments, but I think any temperature below 500 degrees can be made to harden steel, but the higher temperatures cannot be trusted to harden anything above ¾ inch thick.

But while writing you the above facts, I am tempted to give you my theory of steel hardening. I may here say that I have had over 40 years' experience in working all the metals in general use, also have had to pay for all errors made, so I approach the question with caution.

I say that when steel is at a red heat, carbon is in chemical union with the steel, and if the steel be cooled rapidly it remains in chemical union, and this gives us hardened steel, but if allowed to cool slowly the carbon liquates out, or forms other combinations which give us soft steel.

To show how other metals act, and to explain what I mean by liquation, and by chemical union, I give the following examples:

Liquation. When 2 percent of lead is added to brass it liquates out unless cooled quickly; that is, the lead separates from the other alloys in slow cooling, showing itself in patches. The presence of tin will also do the same; other metals in a less degree.

Chemical union. Best shown in brass when alloyed only with zinc and copper in such proportions that it will work well under the hammer, when at a red heat, and also when cold.

Now, seeing that at a red heat the zinc must be over its melting point, the question is, why doesn't the brass fall to pieces when hammered at a temperature above the zinc? The truth is, brass, in nearly all proportions of zinc and copper, does fall to pieces when hammered at a red heat. Yet there are certain proportions of zinc and copper, with a large content of zinc, that will stand working as if zinc was not one of the metals of the brass; these two metals are then considered to be in chemical union.

Here, then, we have chemical union and liquation in other metals, and liquation prevented by rapid cooling; so I ask, Is it not probable that when steel is red hot it is then in chemical union (the carbon and steel), and that by rapid cooling it remains in chemical union? This gives us hardened steel, but when cooled slowly, carbon liquates out into other combinations which give us soft or annealed steel.

The extensive improvements at the Anderson, Ind., plant of the American Wire & Steel Co., will be completed in about two weeks. About $1,000,000 has been expended on the work and the plant has been doubled in size. The work was started last March. All of the old boilers have been torn out and replaced with new ones. The gas furnaces were taken out and coal furnaces substituted. The old part of the plant is in full operation. It is believed that the machinery will be in place and the new buildings ready for operation about the first of the year. About 500 men are now employed and the number will be increased to 1,000.

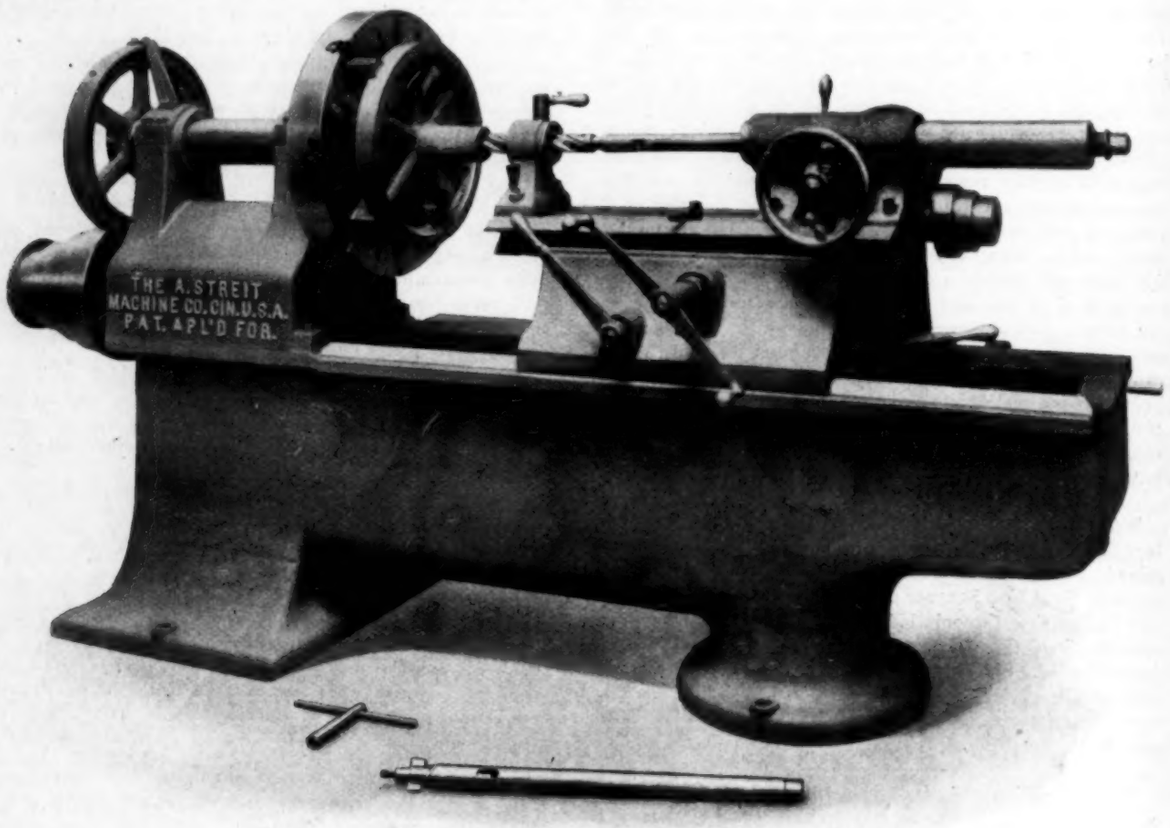
The Badger Steel Roofing & Corrugating Co., La Crosse, Wis., recently incorporated, has elected the following officers: President, Joseph Clarke; vice president, G. F. Sexaxuer; secretary and manager, S. J. Lennon; and treasurer, Henry Hallauer.

A NEW CHUCKING MACHINE.

A boring machine, which has been developed by the A. Streit Machine Co., of Cincinnati, has some peculiarities of construction which will appear on examination of the half-tone. The slide shown on the head is moved back and forth on its base similar to an ordinary turret slide and has a range of 16 inches; this allows the machine to bore work from 1 up to 16 inches in width without moving the base. This slide carries the boring spindle and the forward rest.

The slide is moved forward when the work is chucked so that the forward rest of the bar is immediately behind the cutter when the chip is started. This arrangement renders possible the production of good work in reasonable time even when the cored hole may run considerably out of true.

The gear blank seen in the machine is an example of this kind and has a hub 8½ inches long. This blank was chucked, bored and reamed to $1^{13}/_{16}$ inches in eight minutes, the tool taking a $^{5}/_{16}$-inch cut, and the hole was then within .0005 inch of being straight. Considering this as a sample of probable production, it will be seen that work can be done on this machine with a single cut that is ordinarily done with two or more settings of the cutter.



A NEW CHUCKING MACHINE.

The cutters and reamers fit in end of bar and are interchangeable without removal of the bar from the machine. The bars are forced out of the spindle by the plug shown at end and can then be drawn out at side of head.

The machine as illustrated will bore 24 inches in depth, the spindle is 4½ inches in diameter and machine is as yet built in the one size only, 36 inches. The pulleys on countershaft are 14 by 4¼ inches and should run 175 and 225 r. p. m., respectively. By using two clutch pulleys on the countershaft, eight speeds are secured for the spindle. Weight of machine is 3,700 pounds.

The Presbyterian Hospital, New York City, has ordered from the Ball Engine Co., Erie, Pa., two direct connected units, one of 135 h. p. and one of 100 h. p.

INDUSTRIAL SUMMARY.

[If you are in need of machinery of any description, please notify *The Iron Trade Review*, and we will put you in communication with our advertisers at once.]

New Buyers in the Market and Some of Their Wants:—

L. E. Kennedy & Co., 17 Broadway, New York, N. Y., want to purchase No. 7 Schmidt ball mill or any other good ball mill; also some second-hand rotary kilns.

Anthracite Machinery & Supply Co., Allentown, Pa., wants to buy five 125 or 150-horsepower, two 100-horsepower horizontal return tubular boilers, one 40-horsepower locomotive boiler, one 4-horsepower vertical boiler, one 16x8x16 high-pressure, 14x7x12, 5x4 pumps; also lot of tank pumps and high pressure, one 25-horsepower center-crank automatic engine, one 50 to 80-horsepower side-crank horizontal engine, one 4, 5 or 6-inch discharge centrifugal pump, one 200-horsepower upright or water-tube boiler; must be second-hand, but in perfect condition; also wire hoisting rope and cables all sizes.

The Cardiff Coal Co., Charleston, W. Va., will want mine rail, building material and power plants.

The Butler Coal Mining Co., Oliver Springs, Tenn., wants T iron rails, mining cars and wire rope.

The Anthracite Machinery & Supply Co., Allentown, Pa., wants four 125 or 150-horsepower horizontal return tubular boilers, also four 6-10-15-20 vertical boilers and hoisting engine, second-hand.

The Battey Machinery Co., Rome, Ga., is in the market for second-hand medium-sized steam rock drill.

The Amberson Mfg. Co., Cincinnati, capital $10,000, has been incorporated to manufacture bolts and nuts. The incorporators are. Lenton R. Amberson, Harry T. Amberson, Henry Van Matre, G. K. Moore and Morgan Van Matre.

The Caldwell Bit and Auger Co., Toledo, capital $100,000, has been incorporated by John W. Caldwell, Elmer Gofford, John L. Murray, Robert E. Berry and Cornelius J. Breene.

The Van Buren Iron & Manganese Co., Van Buren, Va., has been incorporated with a capital of $200,000, to develop coal, iron and other mineral lands in Shenandoah county, Va.

The incorporators are: Geo. W. Bryan, J. C. Martin, of Ashland, Ky.; W. H. Martin, Boone Inglis and Chas. W. Wood, of Carlisle, Ky.

The Mohave Coal & Coke Co., Bluefield, W. Va., has been incorporated with a capital of $1,000,000 for the development of coal mines and the manufacture of coke. The incorporators are: B. T. Spencer, of Catonsville, Md.; John E. Anison, Chas. S. Anderson and William Kendall.

The Wake Forest Foundry Co., Wake Forest, N. C., has been incorporated with a capital of $10,000 by John G. Dunn, S. P. Holding, W. W. Holding, J. L. Allen and others.

The Cumberland Foundry & Machine Co., Cumberland, Md., has increased its capital from $5,000 to $10,000.

The J. I. Case Plow Works, Racine, Wis., has increased its capital from $450,000 to $650,000.

The Cape Fear Machine Shops, Wilmington, N. C., has been incorporated with a capital of $100,000 to do general machine work and operate a marine railway.

The Racine Engine & Iron Works, Racine, Wis., have increased their capital from $100,000 to $150,000.

The Simmons-Moore Mfg. Co., Columbus, O., has been incorporated to make and deal in all kinds of equipment for trolley cars; capital $100,000. The incorporators are: Samuel T. Simmons, Walter T. Moore, Martin L. Walker, James M. Butler, Ed Moore, all of Columbus, O.

The Union Hardware Supply Co., of New Cumberland, W. Va., has been incorporated with a capital of $10,000 to manufacture and deal in all kinds of hardware, implements and machinery.

The Dean-Waterman Co., Greenfield, Ind., has been organized to build gas engines, gas pumps and other machinery, with a capital of $20,000. The directors are: Morris B. Dean, S. Jewett Waterman, Thos. H. Newand and Archer G. Dean.

The Locomotive & Machine Co., Montreal, Canada, has been authorized to increase its stock from $1,000,000 to $3,000,000.

The Elliott-Nichols Foundry Co., Denver, Colo., capital stock $15,000, has been incorporated. The directors are: C. D. Elliott, J. D. Nichols and D. E. Gritman.

The Imperial Wheel Co., of Flint, Mich., has increased its capital stock from $300,000 to $500,000.

The National Twist Drill & Tool Co. has been organized at Detroit with a capital of $20,000. The officers are: William H. McGregor, president; Peter J. Hornscheid, vice president; Chas. R. Becker, secretary; and A. W. Ehrman, treasurer.

The Baldwin-Rowland Switch & Signal Co. has been organized at New Haven, Conn., with $125,000 capital. The directors are: R. S. Woodruff, N. W. Kendall, and W. F. Gilbert, New Haven; H. Rowland, South Norwalk; and F. M. Raymond, Westport.

The T. G. Aultman Steam Pump Works, Fairmont, W. Va., have been incorporated to manufacture steam pumps of all kinds; capital $25,000. Incorporators, T. G. Aultman, Sam R. Nuzum and Nannie Aultman, of Fairmont, W. Va., and John Fordyce and Charles E. Parish, of Worthington, W. Va.

The Anthracite Machinery & Supply Co., Allentown, Pa., wants one 200-horsepower water-tube or upright boiler, also wooden tanks 1,200 to 1,400 gallons capacity, second hand.

The Bache-Denman Coal Co., Fort Smith, Ark., wants 60-horsepower locomotive open-bottom fire-front boiler f. o. b. cars Montreal, Ark.; also 10 x 12-inch double-cylinder 4 x 4 foot drum reversible friction engine.

M. M. Hamilton, Shawnee, Tenn., wants 10 to 15-horsepower engine and boiler, second-hand.

R. P. Camden, Angelus Hotel, El Paso, Texas, wants 1,000 tons of 35 or 40-pound relaying rails to lease or rent with privilege of buying.

The Bowen & Street Equipment Co., 301 Atlantic building, Norfolk, Va., is in the market for 1,000 tons or more of relaying 35-pound steel rails.

H. T. B. Harris, paymaster-general, U. S. N., bureau of supplies and accounts, Navy Department, Washington, D. C., will receive proposals until Nov. 17 to furnish at naval station, Key West, Fla., 21,000 pounds cast-iron pipe, 6-inch to 12-inch, with fittings; a quantity of valves and valve boxes, excavating holes and placing anchors therein. Blank proposals will be furnished on application to naval station, Key West, Fla.

Fires and Accidents:—

Love Bros.' foundry and machine shop, Corry, Pa., was totally destroyed by fire Nov. 1, causing a loss of about $10,000.

New Construction:—

The Dornfeld-Kunert Co., of Watertown, Wis., formerly E. Kunert Mfg. Co., is preparing to erect fire-proof buildings, in addition to its present establishment, for foundry, pattern storage and construction purposes. There will be a main building 40x445 feet with several leanto buildings for general storage purposes, 40x60 feet, having brick walls 25 feet high with fire-proof roofing. The present officers, D. Kusel, president; F. Hoffman, treasurer, and A. Bauman, manager, have acquired such a reputation and trade that the present establishment is inadequate. The company turns out heavy boiler work, tanks, bridges, structural steel and iron work, malting drums, malting machinery and brewery work. J. F. Dornfeld, of 134 Van Buren street, Chicago, the well known malting engineer, who has built some of the largest and most modern malting plants in the United States, has associated himself with this company.

The American Casting Co., Birmingham, Ala., recently organized with a capital of $20,000 for the erection of a plant to manufacture hardware specialties and small castings, has its plant well under way, and will be ready for business Jan. 1. The buildings will include a foundry, 50 x 150 feet; machine shop, 60 x 80 feet, and storehouse, 30 x 90 feet. The officers are: George H. Harris, president; H. V. Dimmick, vice president; Daniel B. Dimmick, general manager; and J. E. Dow, secretary and treasurer. The company will make a specialty of hardware castings such as sash weights, tuyere irons, grondstone fixtures, well wheel pulleys, barn door hangers, washers, etc. It has placed its orders for machinery and foundry equipment.

Woodside Bros., proprietors of the Port Arthur Iron Works, Port Arthur, Ont., have decided to rebuild their plant, recently destroyed by fire. Capacity will be doubled. They hope to be able to turn out work in their machine shop in two weeks and in the molding department in three weeks.

S. B. Stine & Son, manufacturers of mining machinery, Osceola Mills, Pa., will rebuild their plant recently destroyed by fire. It is the intention to rebuild on a much larger scale and make the structure as nearly fireproof as possible. The new foundry will be equipped with the latest modern machinery. The main building will be 140 x 40 feet, of tile, crane to traverse the entire length of the building. The foundry will have an output of between 15 and 20 tons of castings per day.

We are officially informed that it is not the intention of the Southern railway to build shops at Augusta, Ga., as reported in daily newspapers. The company has been figuring on extending its shops at Knoxville, but nothing definite has yet been decided upon.

The J. E. Porter Co., Ottawa, Ill., will erect a foundry 60 x 160 feet, fire proof.

The United States Malleable Iron Co., Toledo, O., has purchased a tract of nine acres, on which it will erect a plant, which will consist of a main building 320 x 75 feet, with two L's, each 50 feet in length, a pattern shop 70 x 40 feet, a storage building and an office building. The plant is expected to be in operation next spring and will employ about 100 men. The company was organized about three months ago with a capital of $100,000, under the laws of West Virginia. The officers are: Robert C. Pew, president; Presley T. Craig, vice president; Walter H. Jeffrey, secretary and treasurer.

The Helmick Foundry & Machine Co., Fairmont, W. Va., will erect at once the foundry and blacksmith shop recently damaged by fire.

The Klauer Mfg. Co., Dubuque, Ia., has purchased the entire block on Ninth and Washington streets, heretofore occupied by the Iowa Iron Works. The company will move its present factory to the property just purchased, as the business has reached such proportions that increased facilities are absolutely necessary. The company will put in additional ma-

chinery and largely increase the number of employes. The Iowa Iron Works will build large boiler and machine shops on their new site on Third street. The company will continue the manufacture of steel hulls.

The Montreal Rolling Mills, Montreal, Canada, will erect a new wire and nail plant with an output of 100,000 kegs per year, extend the 12-inch and 18-inch nail mills to double their present capacity, erect cooperage and keg shops, and build larger office buildings.

W. P. Thomas, promoter of the new wire and iron mill which was to have been erected in Kansas City, Mo., announces that the building will not be begun for some months.

Battis Bros., proprietors of the Union Boiler Works, Oshkosh, Wis., contemplate the erection of a three-story brick building, 60 x 120 feet. Improvement is to be made next spring and will cost about $15,000.

Work is rapidly nearing completion on the third of the furnaces at the Port Oram, N. J., group operated by Joseph Wharton. The new stack will have a capacity of 400 tons, and is being constructed along the most modern lines.

The Montford Machine & Casting Co. has just completed a new foundry at Montford avenue, near Chase street, Boston. The main building, 65 x 130 feet, is built of brick with stone trimmings. Particular pains has been taken to obtain thorough ventilation and adequate lighting.

The Union Machine Co., Nashville, Tenn., has outgrown its present quarters on College street and has decided to erect an additional plant at West Nashville. A tract of land on the Tennessee Central railroad has been purchased, and work will soon be begun on the new plant. The machine shop will occupy a space 100 x 180 feet, and the foundry will be about the same size. The latest and best machinery will be installed. The company has been incorporated about five years. Capital stock is $50,000 and it has $12,000 surplus. Its officers are: Guilford Dudley, president; C. W. Hawkins, vice president; A. N. Trice, secretary and treasurer; and W. D. McRae, manager. All these men, with the exception of Mr. Dudley, are practical machinists.

The Falls Hollow Staybolt Co., Cuyahoga Falls, O., has doubled the capacity of its plant by the building of an addition 50 x 200 feet. The company manufactures staybolt iron for railway, locomotive and marine work.

Additional machinery will be installed in the new shop which Herpel Bros., Reynoldsville, Pa., have just completed. The building is 40 x 80 feet, of brick, two stories.

A considerable number of new tools will be installed by the Van Buren Heck & Marvin Co., Findlay, O., in its new plant. The new buildings, which are expected to be ready for occupancy by spring, include a machine shop, 150 x 250 feet, and a foundry 60 x 80 feet.

The Oshkosh Grass Matting Co., Oshkosh, Wis., will erect a new plant, and will be in the market for engines, boilers and shaftings about Jan. 1.

James B. Dibelka, architect, Chicago, is preparing plans for a plant at South Chicago, including a foundry 90 x 200 feet, and a building 100 x 225 feet, which will contain a machine shop, pattern shop and a boiler house. The total cost of the plant, including equipment, will be $90,000. The name of the owner has not been made public.

A. F. Bartlett & Co., Saginaw, Mich., manufacturers of engines, will have a much larger and better plant than before the fire of Sept. 27, which destroyed one of their warehouses, 50 x 170 feet, and another 86 x 165 feet, also the pattern shop and erecting room 60 x 100 feet. The erecting room will be rebuilt at once and they will replace the wooden warehouses with one one-story warehouse of steel frame, concrete foundation, floors and walls. This building will be 108 feet wide by 180 feet long. In addition to this they expect to build a boiler shop 60 x 150 feet.

Harry M. Smith will rebuild machine shop recently reported burned at Webster, Md.; building will be 30 x 60 x 14 feet.

The O. K. Stove & Range Co., Floyd and A streets, Louisville, Ky., will erect an additional foundry of brick and stone to cost about $10,000. J. J. Gaffney is preparing plans and specifications for the structure.

The Crescent Bed Co., Ltd., New Orleans, awarded contract to W. T. Carey & Bro. at $16,500 for erection of building, which will be four stories 65 x 150 feet, and will be equipped with machinery to increase the company's output 500 iron beds per day.

The Pittsburg and Valley Districts:

Twenty mills of the Shenango Tin Plate Co., New Castle, Pa., resumed operations this week after an idleness of five weeks. The remaining ten mills of the plant will be placed in operation as soon as repairs are completed. The tin house was also placed in operation.

The Bessemer plant of the Republic Iron & Steel Co., Youngstown, O., resumed operations this week after an idleness of one week. The furnaces providing iron for this plant continue in full blast.

The Lloyd Booth plant of the United Engineering & Foundry Co., Youngstown, O., was shut down last week for an indefinite period.

The 128 and 42-inch mills of the Homestead plant of the Carnegie Steel Co., Homestead, Pa., are now operating only single turn.

The Duquesne plant of the Carnegie Steel Co., Duquesne, Pa., which had been idle for some time, resumed operations this week in most of its departments. It is reported that the order for tin bars secured from Welsh tin plate manufacturers will be rolled at this plant.

R. Munroe & Son, operating a boiler works at Twenty-Third and Smallman streets, Pittsburg, have organized the R. Munroe & Sons Corporation with a capital of $300,000. A Pennsylvania charter has been applied for and the capital will later be increased to $500,000. J. D., E. R. and C. L. Munroe are to be added to the list of directors in the new organization. In the near future the company will erect a new plant near Pittsburg.

The rolling mills and puddling furnaces of the Spang-Chalfant Co., Etna, Pa., were shut down this week for extensive repairs.

The plant of the Pittsburg Forge & Iron Co., Allegheny, Pa., which had been idle for some time, resumed operations in full this week.

The rolling mill of the Stewart Iron Co., Sharon, Pa., resumed operations last week.

The Westinghouse Airbrake Co., Pittsburg, Pa., has been granted a new charter with a capital stock of $11,000,000. The taking out of this charter was merely formal in order to take over the Electro-Magnetic Brake Co., which has been owned by the Westinghouse Airbrake Co. and which was consolidated with that company at the last annual meeting.

Furnace F of the Edgar Thomson plant of the Carnegie Steel Co., Braddock, Pa., will shortly go out of blast for relining and rebuilding. Furnace H, of this plant, which went out for repairs some time ago, will shortly be blown in again. Furnace C of this plant is operating on ferro-manganese, while furnace A is producing spiegel. Furnace C will go out of blast in a few weeks for relining and the stack's output will be materially increased by the addition of eight feet to its top.

General Industrial Notes:—

Altnow & Ollig have decided to locate a foundry at Red Lake Falls, Minn., negotiating the Great Northern for a lease of ground. The plant will be removed from Winthrop, Minn.

The Spoeke Machine Co., Indianapolis, recently incorporated, will take over the assets of another concern of that city and will, of course, have increased facilities in addition, for handling the manufacture of general or special machinery. It also expects to add an engineering department a little later on. Just at present it is looking for a suitable location at Indianapolis, and would also favorably consider the manufacture of some staple line of machinery, either on contract or to handle the line itself.

The Valley Wind Engine & Iron Steel Co., recently organized at Bay City, Mich, with a capital of $75,000, has purchased the plant of the Valley Iron Co., on Saginaw Street. The products to be manufactured are wind mills and grain grinders.

The mills of the Pope Tin Co., Steubenville, Ohio, have resumed operations after a shutdown of 2 months. Several hundred men have been given employment.